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Skeptical Inquirer

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Celebrity Scientists

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"... promotes scientific inquiry, critical investigation, and the use of reason in examining controversial and extraordinary claims."

[FROM THE EDITOR

Today's Celebrity Scientists

We live in a celebrity-drenched age. We may lament that fact; too often the focus is on personalities and trivialities. But not all celebrities are in show business. Science has its celebrities too. And just as many show-business celebrities use their platforms to promote good causes, so too do scientist celebrities—among them, the cause of science itself.

In this issue, we present an article excerpted by American University communications researcher Declan Fahy from his new book *The New Celebrity Scientists.* (I thank Matt Nisbet for alerting me to it.) As Fahy says, a handful of publicly visible scientists represent science to the public. They are media-savvy. They personify science to the layman. They stimulate new thinking, drive scientific controversies, mobilize social movements, and shape policy.

I've been intrigued by this approach to examining ways the public learns about science since my *Science News* days. Back then Rae Goodell, then at MIT, published her book *The Visible Scientists*, based on her Stanford PhD dissertation. It charmed me so much I wrote a feature article about it in *Science News*. I was pleased to learn from Fahy that Goodell's book had inspired him.

Scientist celebrities are nothing new. Fahy begins with Darwin, but before that Benjamin Franklin was a true international scientist celebrity. His electrical experiments and invention of the lightning rod made him a famous and venerated figure on both sides of the Atlantic. Einstein is perhaps the leading celebrity scientist of all time; his reputation is still secure among both scientists and the public. In the latter half of the twentieth century, Goodell's book profiled scientist celebrities such as Margaret Mead, Linus Pauling, Paul Ehrlich, B.F. Skinner, Barry Commoner, and Carl Sagan. Fahy profiles Stephen Hawking, Richard Dawkins, Steven Pinker, Susan Greenfield, Stephen Jay Gould, James Lovelock, Brian Greene, and Neil deGrasse Tyson. You can probably think of a few others you could add.

What is the connection to scientific skepticism? Well, note that four of Fahy's subjects are fellows of our Committee for Skeptical Inquiry. Sagan and Skinner were as well. We have always drawn to us the noteworthy scientists who are also great communicators and public educators. They not only tell us of the wonders of science but also show us the qualities of science—including both imagination and skepticism—that lead to our ability to winnow out great truths about nature.

* * *

How many times have we heard dramatic near-death experience (NDE) stories from those who say they returned from The Other Side? What happens when a skeptic has an NDE? Stephanie Savage is just that person. She recovered after six weeks in a coma. She describes her long "coma-dream" and her soap-opera-like "Brain TV." There were some similarities with typical NDEs but many more differences. She saw not Jesus and heaven but *The Hitchhiker's Guide to the Galaxy*. Since her recovery, she has learned a lot about the neuroscience of NDEs and shares that here. She also provides a perhaps more sympathetic view toward coma-sufferers than you have heard before.

—Kendrick Frazier

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Stephen Hawking, Neil deGrasse Tyson, Richard Dawkins, Steven Pinker, and Susan Greenfield are among today's scientists who have achieved celebrity status. Celebrity scientists like them (and Darwin, Einstein, and Sagan before them) are the public face of science. They help shape the image of science, stimulate public appreciation of science, and mobilize social movements. See page 34.

Cosmos: A Spacetime Odyssey and Joe Schwarcz Win CSI's Balles Prizes in Critical Thinking

People behind *Cosmos: A Spacetime Odyssey*: (from left) Executive Producer/Director Brannon Braga, Executive Producer Mitchell Cannold, Host Neil deGrasse Tyson, and Executive Producer/Director/Writer Ann Druyan.

Each year the Committee for Skeptical Inquiry awards the Robert P. Balles Annual Prize in Critical Thinking to the person, publication, or production that has done the most outstanding work in promoting science and reason to the general public. Given the size and enthusiastic response of its audience, the herculean effort undertaken to bring it to life, and the way it so celebrates and advocates for science and reason, one of the two Balles Prizes for 2014 goes to the creators, producers, and writers of *Cosmos: A Spacetime Odyssey*.

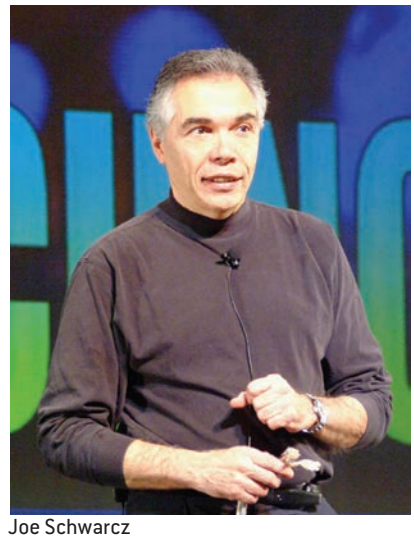
Building on the groundbreaking series created by Ann Druyan, Steven Soter, and the late Carl Sagan in 1980, the new *Cosmos: A Spacetime Odyssey*, hosted by Neil deGrasse Tyson, aired on multiple channels in the fall of 2014 and took tens of millions of people on an incredible voyage through the wonders of the universe. *Cosmos* celebrated the discoveries of science and the people responsible for them. It also firmly positioned itself as a champion of critical, evidence-based thinking. Without ever disrespecting viewers who might hold opinions contrary to scientific consensus, *Cosmos* deftly and eloquently tackled hot-button scientific issues such as climate change and evolution, while also addressing our species' history of religious persecution and gender discrimination.

It may be another generation before we know the full scope of the effect *Cosmos: A Spacetime Odyssey* has had on the minds and hearts of people around the world.

Cosmos opened the eyes of a new generation to humanity's triumphs, its mistakes, and its astounding potential to reach unimagined heights. It honored the legacy of Carl Sagan and the first *Cosmos* series of the 1980s, while breaking new ground with a style all its own that resonates with the audience of the 2010s. It may be another generation before we know the full scope of the effect *Cosmos: A Spacetime Odyssey* has had on the minds and hearts of people around the world, but we can be sure that its impact, like that of the first *Cosmos*, will be felt generations from now.

The second Balles Prize for 2014 goes to the author of a project of an entirely different scope, but one no less crucial in its aims. Dr. Joe Schwarcz has long been among the best science communicators, as director of McGill University's Office for Science & Society, author of a wide range of books and articles, host of *The Dr. Joe Show* on Canadian radio, and a frequently sought science expert for the media.

He is honored this year for his latest book, *Is That a Fact?*, which arrives just in time to take on what often feels like a tsunami of anti-science and pseudoscientific claims in politics, the media, and popular culture. The anti-vaccine movement, the pushback against GMOs, the marketing of homeopathic products as medicine, the preponderance of popular gurus such as Dr. Oz and Kevin Trudeau making extraordinary claims about our health without extraordinary evidence to back them up—all of these things are beginning to suffer and wilt under the light of public scrutiny.



Joe Schwarcz

Joe Schwarcz's book *Is That a Fact?* unflinchingly takes on all kinds of popular misinformation (or as he calls it, "scientifically bankrupt slop") and gives clear, friendly guidance that the general reader can use to better sniff out the

factual from the fantastic. It is a book that could not have come at a better time: when the pseudoscientific noise level is high, and the public is primed and hungry for the truth.

* * *

The Robert P. Balles Annual Prize in Critical Thinking is a $2,500 award given to the author of the published work that best exemplifies healthy skepticism, logical analysis, or empirical science. Each year, the Committee for Skeptical Inquiry, a program of the Center for Inquiry, which publishes the Skeptical Inquirer, selects the paper, article, book, or other publication that has the greatest potential to create positive reader awareness of important scientific issues.

This prize was established through the generosity of Robert P. Balles, a longtime supporter of CSI and a practicing Christian, along with the Robert P. Balles Endowed Memorial Fund, a permanent endowment fund for the benefit of CSI.

This is the tenth year the Robert P. Balles Prize has been presented. Previous winners are:

- 2013: Paul Offit for his book *Do You Believe in Magic? The Sense and Nonsense of Alternative Medicine*
- 2012: Steven Salzberg for his "Fighting Pseudoscience" column in *Forbes*; and Joe Nickell, for his book *The Science of Ghosts—Searching for Spirits of the Dead*
- 2011: Richard Wiseman, psychologist and entertainer, for his book *Paranormality: Why We See What Isn't There*
- 2010: Steven Novella for his tremendous body of work, including the *Skeptics' Guide to the Universe*, *Science-Based Medicine*, *Neurologica*, Skeptical Inquirer column "The Science of Medicine," and his tireless travel and lecture schedule on behalf of skepticism
- 2009: Michael Specter, *New Yorker* staff writer and former foreign correspondent for *The New York Times*, for his book *Denialism: How Irrational Thinking Hinders Scientific Progress, Harms the Planet, and Threatens Our Lives*
- 2008: Leonard Mlodinow, physicist, author, and Caltech professor, for his book *The Drunkard's Walk: How Randomness Rules Our Lives*
- 2007: Natalie Angier, *New York Times* science writer, for her book *The Canon: A Whirligig Tour of the Beautiful Basics of Science*
- 2006: Ben Goldacre for his weekly column, "Bad Science," published in *The Guardian* newspaper (United Kingdom)
- 2005: Shared by Andrew Skolnick, Ray Hyman, and Joe Nickell for their series of articles in the Skeptical Inquirer on "Testing 'The Girl with X-Ray Eyes'"

Call for Nominations: There's amazing work being produced in 2015, with much more on the way. If you'd like to vouch for the author you think deserves the 2015 Balles Prize, contact CSI Executive Director Barry Karr at bkarr@centerforinquiry.net.

CFI Testimony Urges FDA to Regulate Homeopathic Products

Kendrick Frazier

Homeopathy is "at complete odds with our modern understanding of biology, chemistry, and physics," and the U.S. Food and Drug Administration should invoke "strict guidelines requiring homeopathic products meet the same standards as non-homeopathic drugs," the Center for Inquiry said in invited testimony at an FDA hearing on homeopathic product regulation on April 20.

"Homeopathy is unsupported by scientific evidence, ineffective in treating illness, and, when relied upon instead of actual medicine, dangerous and even deadly," the CFI testimony concluded.

Michael De Dora, head of CFI's Office of Public Policy in Washington, D.C., delivered the testimony the first morning of the two-day hearing, April 20–21, at FDA's White Oak campus in Silver Spring, Maryland. The FDA streamed the testimony live on a webcast.

De Dora noted that the CFI testi-

mony was given not only on behalf of the organization but also on behalf of "dozens of doctors and scientists associated with CFI and its affiliate program, the Committee for Skeptical Inquiry, with whom we work on these matters."

In his answers to questions afterward, De Dora mentioned articles critically examining homeopathy in the Skeptical Inquirer, CSI's magazine. (The most recent two are "An Introduction to Homeopathy" by Harriet Hall, September/October 2014, and "Homeopathy: A Critique of Current Research," by Edzard Ernst, November/December 2012. See also Steven Novella's column "It's Time for Science-Based Medicine" and other articles in SI's "Medical Misinformation" special issue, May/June 2015.)

The full text of De Dora's testimony appears as a Commentary on page 32 of this issue.

The FDA announced in March it was holding a public hearing to "obtain information and comments from stakeholders" about the use of products labeled as homeopathic as well as the agency's regulatory framework about them. Although the FDA has the authority to require homeopathic drugs undergo testing for effectiveness, to date it has declined to do so.

CFI had been urging the FDA for years to no longer exempt homeopathy products from the same requirements of proven safety and efficacy that mainstream drugs are required to meet. In August 2011, for instance, CFI petitioned the FDA to institute regulations that would require homeopathic products to meet the same standards of effectiveness as conventional drugs. One can assume that petition helped lead to these hearings. And in April 2012, CFI announced it was willing to assist individuals who believe they have been harmed or defrauded through homeopathy marketing.

"People are unconscionably being misled in their time of greatest vulnerability: when they're sick," Ron Lindsay, president and CEO of CFI, said at the time. "We intend to stand up for consumers and their right to be told the truth about the medicines they spend their hard-earned money on. We will take the fight to the perpetrators of homeopathic fraud in the media, in legislatures, and yes, in the courts."

In his testimony at the April 2015 hearing, CFI's De Dora applauded the FDA for holding the hearing and said a reassessment of the FDA's regulation of homeopathic products is clearly warranted. He briefly reviewed the scientific evidence showing that "aside from the placebo effect, homeopathic products have no effect in treating illnesses." He noted that a large meta-study released in March by the Australian National Health and Medical Research Council concluded, "There are no health conditions for which there is reliable evidence that homeopathy is effective."

De Dora's CFI testimony concluded: "…The FDA should rely on its well-established regulatory system to require homeopathic products to meet the same standards as non-homeopathic drugs…"

As for the harm homeopathy does, De Dora gave four specific examples but said the greatest harm is when people rely on homeopathic products to the exclusion of proven scientific remedies.

De Dora's CFI testimony concluded: "To ensure the protection of the American public, the FDA should rely on its well-established regulatory system to require homeopathic products to meet the same standards as non-homeopathic drugs, or at the least mandate labeling for homeopathic products which states: the product's claimed active ingredients in plain English; and that the product has not been evaluated by the FDA for safety or effectiveness. The American public deserves as much from the agency tasked with protecting them."

What the outcome of the hearings may be won't be known for a long time. Nothing ever happens quickly or easily in Washington. CFI's testimony followed that of leadoff presenter Adriane Fugh-Berman of the Georgetown University Medical Center. Author of two books on complementary medicine, she said the evidence of homeopathy's effectiveness is "scant or nil," "the dangers of homeopathy are obvious," and it is misleading to sell homeopathic products alongside conventional over-the-counter drugs that have met FDA scrutiny. But De Dora was followed by Wayne Jonas, former head of the National Center for Complementary and Alternative Medicine, who gave a discursive talk seeming to contend that meta-analyses can't really answer whether homeopathy works and claiming that "people do seem to get better" after taking homeopathic products. Jonas was followed by a litany of other pro-homeopathy stakeholders, including representatives of the Homeopathic Academy of Naturopathic Physicians and various other homeopathic organizations. Whatever happens, the homeopaths won't be able to claim they didn't get their say.

Science-based medicine did have its proponents at the hearings, notably CFI. But the FDA panel will have to sift through a lot of pseudoscientific assertions and squishy self-serving rationalizations from homeopathy supporters if it is to come to a consumer-protecting, scientifically reasonable decision to institute efficacy testing, labeling, and warnings.

The hearing was a necessary—and big—first step.

Kendrick Frazier is the editor of the Skeptical Inquirer.

Marble-Playing Ghost or Flawed Statistics?

Douglas M. Stokes

The feature article in the March 2015 issue of the Society for Scientific Exploration's *EdgeScience* was "Does Consciousness Continue Beyond Death? A Search for Certainty" by Michael Urheber with Rhonda Drake. Urheber's friend Frank Bava used to carry a lucky marble around with him before he died of a heart attack (as well as long after that event, as we shall see). The morning of Bava's funeral, Urheber woke up realizing that Bava had loaned the lucky marble to him the weekend before the funeral (in retrospect, possibly a bad decision on Bava's part).

It is of course absurd to compute statistical significance levels for the miraculousness of ostensible marble teleportations or materializations, even if we disregard the fact that the telekinetic subject is well past the stage of rigor mortis and is likely to have poor muscle tone for chucking marbles.

Urheber decided to return the marble to the deceased, but not before wrapping it in a note that read "Please toss this back if you're ever around." Surely this would be a daunting task for a man as dead as Frank Bava was. Urheber put said note and marble in the corpse's suit pocket before burial.

Over the next six months, seventeen people told Urheber that they unexpectedly had a close encounter of the agate kind (i.e., they had come across a marble). Based on a series of entertaining assumptions, Urheber and Drake computed the probability of a person finding at least one marble in a six-month period as 0.3901. Taking this to the seventeenth power, they computed the probability that seventeen people will all come across a marble in a six-month period as 1 in 8.9 million. On this basis, Urheber proclaimed that these results achieve a high level of statistical significance, proving that there is indeed an afterlife. Yes, Virginia there is a Santa Claus, or at least someone who teleports marble gifts to mere mortals, and his name is Frank Bava, but his cheeks may not be so rosy.

It is fairly easy to show that the claim of statistical significance is completely unwarranted. Urheber has computed the probability that a preselected group of seventeen people will all come across at least one marble in a six-month period. However, it is likely that Urheber's preaching about the wonders of marbles that have been lost but now are found were not confined to an audience of the seventeen people who reported finding miraculous marbles; he probably reached a wider audience. If his appeal for marble sightings reached forty people, then the probability of getting seventeen or more marble finds is 0.382, which falls well short of statistical significance. To achieve the traditional 0.01 level of significance, twenty-four or more sightings of possibly paranormally transported marbles would be required.

It is of course absurd to compute statistical significance levels for the miraculousness of ostensible marble teleportations or materializations, even if we disregard the fact that the telekinetic subject is well past the stage of rigor mortis and is likely to have poor muscle tone for chucking marbles. Urheber's coauthor Rhonda Drake teaches college level statistics, so she should know better. Actually, judging from the cautionary remarks that have been sprinkled throughout the article, she does know better and has apparently tried her damnedest to communicate adequate statistical methodology to her seemingly clueless coauthor, but to no avail. Urheber's academic training was in music.

Let's be clear about one thing. All this study has found is that when an audience is told to be on the lookout for marbles, some of them will find marbles (unless they restrict their search to the interior of the researcher's cranium).

Douglas M. Stokes is the author of *Reimagining the Soul* (McFarland, 2014) and the chapter "The Case Against Psi," in *Parapsychology: A Handbook for the 21st Century* (McFarland, in press).

The Latest Oz Affair: Doctors' Demand That Columbia Fire Him Creates a Firestorm of Reaction

Kendrick Frazier

It was another bad week for Dr. Oz.

The last time we had occasion to report on daytime television host Mehmet Oz ("Dr. Oz" as he's better known) came after he got a public lambasting in June of last year from Sen. Claire McCaskill (D-Missouri) in a Senate subcommittee hearing on protecting consumers from false and deceptive advertising.

McCaskill upbraided Oz for promoting green coffee extract, raspberry ketone, and garcinia cambogia, among other dubious supplements. "I don't know why you need to say this stuff, because you know it's not true. . . . Why would you cheapen your show by saying things like that?" she asked him. (See David H. Gorski, "The Great and Powerful Oz Humbled in Senate Hearing," SI, September/October 2014.)

Oz seemed a bit chastened and promised to use less "flowery" language in the future.

Then in December, a study published in the *British Medical Journal* concluded that less than one-third of claims made on *The Dr. Oz Show* have support in the medical literature and 40 percent of them can't be backed up at all.

In April 2015, Oz found himself under attack from still another quarter: a group of ten doctors from Stanford University, University of California at San Diego, and other mostly West Coast universities and institutions. They called on Columbia University's College of Physicians and Surgeons to discontinue its relationship with Oz. The reasons were the same—Oz's regular on-air promotion of dubious remedies—but the requested remedy, essentially his firing, came just short of calling on his show to be canceled.

"Dr. Oz is guilty of either outrageous conflicts of interest or flawed judgments about what constitutes appropriate medical treatments, or both," said the letter. "Dr. Oz has repeatedly sown disdain for science and for evidence-based medicine. Worst of all, he has manifested an egregious lack of integrity by promoting quack treatments and cures in the interest of financial gain.

Even though CSI physicians and medical scientists have criticized Oz for exactly the same reasons stated in the letter, going after someone's job or academic position is not usually the best strategy.

"Whatever the nature of his pathology, members of the public are being misled and endangered, which makes Dr. Oz's presence on the faculty of a prestigious medical institution unacceptable."

Oz is more than just a faculty member at Columbia. He is a cardiothoracic surgeon and vice chair of the Department of Surgery.

The call brought a quick and predictable response from Columbia invoking academic freedom: "Columbia is committed to the principle of academic freedom and to upholding faculty members' freedom of expression for statements they make in public discussion," said Doug Levy, chief communications officer for Columbia's medical center to Henry I. Miller, the Robert Wesson Fellow in Scientific Philosophy & Public Policy at Stanford's Hoover Institution, who spearheaded the letter.

Miller responded to Levy that "freedoms end where patient safety begins, and Oz's promotion of worthless products that might have side effects and that delay patients seeking safe and effective therapies threatens public safety."

None of the ten signers of the letter are directly associated with the Committee for Skeptical Inquiry or the Skeptical Inquirer. Even though CSI physicians and medical scientists have criticized Oz for exactly the same reasons stated in the letter, going after someone's job or academic position is not usually the best strategy. In academia, it always brings forth the defense of academic freedom, which is considered sacrosanct. Furthermore, trying to get someone fired can cause those who would otherwise join in the criticism to rally to the person's defense.

In his classic essay "Proper Criticism" (SI, July/August 2001, available on our website at http://www.csicop.org/si/show/proper_criticism/), Ray Hyman writes, "Avoid, at all costs, creating the impression that you are trying to interfere with someone's civil liberties. Do not try to get someone fired from his or her job."

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Nevertheless, the call brought enormous public attention to the letter and to scientists' longtime criticisms of Oz for being a shill on his show for dubious products. It made network television news broadcasts that evening and the next morning and provoked news articles everywhere, and even an editorial cartoon or two.

For his part, Oz initially stated lamely that he offers "multiple points of view" on his show about health-related issues and said he offers his opinions "without conflict of interest." He indicated he would address the claims on his show the next week.

He did so at length on his show that aired April 23. But instead of addressing the quackery accusations, he spent most of his time attacking his accusers—an effective, if intellectually questionable, tactic. He asserted that they had conflicts of interest themselves. He defended the advice he gives. He again referred to "multiple points of view; diverse opinions." He played the "freedom of speech" card repeatedly (demonstrating again why calling for someone's firing can backfire). He said he "'would not be silenced."

In an interview with NBC, he curiously claimed his show "is not a medical show," as though a program featuring medical advice from a prominent Columbia University physician who goes by "Dr. Oz" and whose show is titled *The Dr. Oz Show* can really be considered to be about something other than medicine and health. His defense probably satisfied his ardent fans, but science-based critics are not likely to ease up on their criticisms of his show's continuing promotion of miraculous and dubious remedies.

For his part, Oz initially stated lamely that he offers "multiple points of view" on his show about health-related issues.

The next day, April 24, Michael Rosenbaum, Dana March, and six other Columbia Medical Center faculty members published an op-ed in *USA Today*. They defended Oz's work as a Columbia physician but gently rebuked their fellow faculty member for touting untested remedies on his TV show. Although Columbia should not terminate Oz, procedures about "broadcast medicine" need to be re-evaluated, they said. "A scientist presenting clinical trial results at an academic conference is required to distinguish evidence-based from hypothetical applications. Don't virtual patients deserve similar consideration?" They added, "Non-evidence based medical recommendations presented without caveats are costly and potentially harmful."

—Kendrick Frazier

The 16th European Skeptics Congress will be held at Goldsmiths College, University of London, from September 11 to 13, 2015. The Congress is jointly organized by the Association for Skeptical Enquiry (ASKE) and Goldsmith College's Anomalistic Psychology Research Unit (APRU).

Events will include keynote addresses by distinguished speakers, formal presentations, debates, and poster presentations, plus a pre-congress session and Skeptics in the Pub meetings in the evenings. A section of the Congress will cover research at APRU. Visit the Congress website below for up-to-date information concerning the program, registration and accommodations.

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Bioscientist and CSI Fellow Elie A. Shneour Dies at Eighty-Nine

Kendrick Frazier

Elie A. Shneour, a neurochemist and biophysicist and a longtime fellow of the Committee for Skeptical Inquiry, died April 14. He was eighty-nine.

Shneour was president and research director of Biosystems Research Institute in La Jolla, California, which provided consulting services to industry and government. Born in Paris in 1925, he escaped Nazi-occupied France with his family and got to the United States in 1941. He served in the U.S. Army, became a naturalized U.S. citizen, and was educated at Bard College (which later gave him an honorary doctorate), Berkeley, and UCLA (where he got his PhD in biological chemistry).

He always had wide-ranging scientific and intellectual interests. He participated in a study titled "Biology and the Exploration of Mars" conducted by the National Academy of Sciences' Space Science Board in 1964–1965 and was lead editor of its *Extraterrestrial Life: An Anthology and Bibliography*. He and Samuel Moffat also edited the 1966 book *Life Beyond the Earth*, published by the National Science Teachers Association, with an epilogue by Nobel laureate biologist Joshua Lederberg. He later wrote the book *The Malnourished Mind.*

Shneour served on many other national and international science advisory bodies and was a member of the American Chemical Society, the American Society of Biological Chemists, the American Society for Biochemistry and Molecular Biology, the International Society for Neurochemistry, Sigma Xi, and several other scientific organizations. He was also a longtime scientific advisor to the Cousteau Society.

Shneour was a charter member of the San Diego Association for Rational Inquiry and a strong supporter of the Skeptical Inquirer and CSICOP (now Committee for Skeptical Inquiry). Over the years, he wrote a number of provocative articles for SI. An early one was "Occam's Razor," the lead essay in our tenth anniversary issue (Summer 1986). In it he called science "the most powerful tool ever devised by the mind of man for the control of his destiny" and wrote, "The honest and simple application of Occam's Razor to paranormal claims would quickly consign most of them to oblivion." He concluded: "Any rational being is welcome to join the cause of science. There are no statements of belief to execute, only the demonstrable application of reason."

"He was a true Renaissance man."

Another notable SI article was "Planting a Seed of Doubt" (July/August 1998), available online: "Skeptics should forego any thought of convincing the unconvinced that we hold the torch of truth illuminating the darkness. A more modest, realistic and achievable goal is to encourage the idea that we may be mistaken. Doubt is humbling and constructive."

More recently, he wrote "Obfuscating Biological Evolution" (November/December 2005), "The Ongoing Decline of Religion" (May/June 2012), and "When Does Human Life Begin?" (January/February 2014), which stimulated a flood of letters. Just a month before his death he submitted to us a short essay he had been working on for months titled "The God of the Big Bang" but then immediately decided it was not yet ready for publication and withdrew it.

"He was a unique and brilliant man . . . with the beautiful touch of the romantic . . . ," one of his friends wrote his son Mark upon news of his death. "Elie was so informed and could speak brilliantly about many topics: science, medicine, art, food, history. He was a man of another time to be sure. He was a true Renaissance man."

U.K. Efforts to End Sex Trafficking in Africa Enlist Witchcraft

Benjamin Radford

The British government is using a powerful new tool in its efforts to end sex trafficking and slavery in Africa: witchcraft—or at least belief in magic. *The Independent* newspaper journalist Paul Peachy reported on an innovative method to help West African women who have been forced into sex trafficking:

> Britain's anti-slavery commissioner is examining radical new plans to prosecute sex traffickers by "reversing" the juju spells that terrorize many of their victims into staying silent. More than 100 Nigerian women were identified last year as having been trafficked into sexual slavery with their obedience ensured by magic rituals that threaten them with infertility or death if they reveal what has happened to them.

According to the newspaper's February 15 issue, "The level of terror instilled by juju led British police to spend two years trying to dispel the fears of women so they could give evidence in the first case of its kind in Europe, in 2011." The victims are often reluctant to testify in court against those who abducted and forced them into prostitution, in part because of fear of magical retribution. Kevin Hyland, England's first anti-slavery commissioner, has been in contact with anti-trafficking officials in Nigeria who have located witch doctors believed to have placed curses on the victims and forced them to remove the curse or face criminal prosecution.

Using magic (or, more accurately, belief in magic) as a way to stem human trafficking is not only a novel idea but likely a very effective one. Belief in the power of magic is very strong throughout much of sub-Saharan Africa, and many live under the (real or perceived) threat of magical retribution and the fear that witch doctors—or those who hire them—have power over their fortunes, health, and lives.

Measures that fail to address the victims' underlying belief system are unlikely to be successful because to the extent that a problem is psychosomatic, the root of the problem will be ignored. It is not helpful

for a psychologist to simply tell an someone with obsessive-compulsive disorder, for example, that he doesn't have to open and close his front door seven times before entering his home; he will still feel the compulsion to do so regardless of any arguments or evidence that it's unnecessary. Disordered thoughts and compulsions can be dampened by medication, but at the end of the day what's needed to address the root of the problem is a new way of framing or understanding the issue. If the Nigerian women truly believe that they have been cursed, no amount of denying or debunking (especially by foreign British doctors) will convince them otherwise; you have to fight fire with fire, or magic with magic.

Belief in the power of curses is a form of the placebo effect, which works only if the patient believes it is effective. The power of the placebo is strong indeed. It can give pain medications a boost and even enhance athletic performance; recent research revealed that runners who (wrongly) believed that they were performing with doped blood ran faster than they thought they could.

While the idea of curses may seem antiquated or confined to the poor and superstitious Third World, it is not the case. Plenty of wealthy and educated Americans believe in curses, and in fact it is not unusual for self-proclaimed psychics to con their clients into believing that a curse has been placed upon them and that the psychic can help remove the curse—for a fee, of course. It often begins with a typical psychic reading, when a person goes to a fortuneteller or "intuitive" seeking advice or insight. In the course of the reading, the psychic may ask if the client has had any bad luck, accidents, struggles, health problems, or other misfortunes; like most of us, some recent examples will come to mind and the psychic may then claim that these bad things were not simply random chance but harmful acts intentionally caused by an enemy—a curse in other words. It doesn't always happen, and the clients don't always fall for this scam, but many do, and it is common enough that psychics are routinely arrested and charged with fraud across the United States for this ancient curse-removal scheme. Belief in some form of magic is universal; if that belief can be used to help stop sex trafficking, then so much the better.

Benjamin Radford is the deputy editor of the Skeptical Inquirer.

A 'Taking Back Skepticism' Campaign and Online Course

John Cook

Skepticism is at the heart of the scientific method. However, the word *skeptic* has been appropriated by people who deny climate science. A growing body of research shows that political ideology is the dominant driver of climate science denial. Those ideologically predisposed to reject climate change resort to cherry picking, logical fallacies, and conspiracy theories to dismiss climate science. Science denial is the antithesis of skepticism.

The public has come to associate skepticism with the anti-science rhetoric of climate science denial. They need to understand that skepticism embraces the values of rational, evidence-based inquiry.

The skeptic community needs to take back the word *skeptic*. The statement "Deniers Are Not Skeptics" signed in December by more than fifty Committee for Skeptical Inquiry fellows (SI, March/April 2015, online at http://www.csicop.org/news/show/deniers_are_not_skeptics) and later by thousands of others was a good start.

The public has come to associate skepticism with the anti-science rhetoric of climate science denial. They need to understand that skepticism embraces the values of rational, evidence-based inquiry. They also need to recognize the tell-tale characteristics of denial in order to distinguish it from genuine skepticism.

The science of science denial is unpacked in the upcoming Massive Online Open Course (MOOC) Making Sense of Climate Science Denial by the University of Queensland and EdX. It examines the psychology driving the rejection of climate science. It explains how biased thinking leads to the fallacies within the myths that distort climate science. Finally, it outlines the psychological research into the most effective ways to respond to science denial. This free MOOC equips people with the knowledge and critical thinking skills to discern and respond to climate science denial.

I proposed a "Taking Back Skepticism" campaign, with endorsement from skeptical societies and advocates of rational inquiry across the world. The campaign highlights the values of genuine skepticism and distinguishes them from the characteristics of science denial. The campaign launched April 28 when Making Sense of Climate Science Denial was released, making the free MOOC content available for people wishing to learn more and equip themselves to respond to climate science denial. For more information, see https://www.edx.org/course/making-sense-climate-science-denial-uqx-denial101x.

A longer version of this article appears on csicop.org.

John Cook is the Climate Communication Fellow for the Global Change Institute at the University of Queensland, Australia. He created and maintains the Skeptical Science website (what peer-reviewed science says about global warming), and is coauthor of *Climate Change Denial* (2011) and the 2013 college textbook *Climate Change Science: A Modern Synthesis*.

Joe Nickell, PhD, is CSI's senior research fellow. A former stage magician and private detective, he has—since 1969—investigated numerous cases of alleged ghosts, poltergeists, and demons from a scientific perspective.

Dillinger's Ghost

and Hoover's Vendetta against G-Man Purvis

Not since Jesse James had a bank robber attained such a Robin Hood image. Although there were other "public enemies" of the Depression Era—such as "Pretty Boy Floyd" and "Baby Face" Nelson—John Dillinger had daring and style to spare. But so did a tenacious G-man named Melvin Purvis (Figure 1), an agent so effective and so adored by the public and press that his boss, Federal Bureau of Investigation Director J. Edgar Hoover, seethed with jealousy. Well, I'm getting ahead of a most frightening story in the annals of crime fighting, and I don't mean the tale of Dillinger's ghost.

Dillinger

The biography of John Herbert Dillinger (1903–1934) begins with an endearing story of him at age three, dragging a chair to the side of his mother's coffin, climbing up, and trying to shake her awake. It is tempered by the account of a moonshine-intoxicated punk of twenty-one, who teamed up with a more seasoned thug, attempting to rob an elderly grocer of his weekend receipts. As they beat the struggling old man, Dillinger's revolver went off and the pair fled, the accomplice driving off and leaving young Dillinger to fend for himself. Although both were soon arrested, the latter was sentenced to just two years, while Dillinger drew a prison term of ten to twenty years. Freed in 1933, after only nine years, he was rearrested while still on parole as the leader of a new band of bank robbers (Girardin 1994, 10–32).

After some of his old prison buddies escaped, they raided the jail in Lima, Ohio, where Dillinger had been lodged, freeing him but accidentally killing the sheriff in the process. Over the next few months, the gang committed a series of bold bank heists, although probably not the more than thirty credited to them. Then, in January 1934, police in Tucson, Arizona, arrested Dillinger and most of his gang. Sent to an "escape-proof" jail in Indiana, he was soon escaping—using a pistol he suddenly brandished. Legend says the pistol was a dummy that Dillinger carved from wood and blackened with shoe polish, while a conspiracy theory holds that a bribed judge smuggled in a real pistol (Girardin 1994, 32–108; Toland 1963).

Dillinger assembled another gang, this time including the infamous George "Baby Face" Nelson. Two robberies later, the FBI got the drop on Dillinger in St. Paul, but he escaped with only a gunshot to the leg as his girlfriend, Evelyn "Billie" Frechette, stepped on the gas and sped them to safety. Dillinger had another close call one night a month later in the infamous affair at Wisconsin's Little Bohemia Lodge. FBI agents led by Melvin Purvis approached the lodge but were forced to dive for cover from machine-gun fire. Three non-gangsters, who jumped in a car and failed to stop when ordered to, were shot by Purvis's men, one fatally, and Dillinger, Nelson, and others escaped (Girardin 1994, 113–156; Purvis 1936, 21).

Dillinger underwent plastic surgery to alter his appearance and damage his fingerprints. Neither attempt was very successful. Billie having been arrested, Dillinger had taken up with a waitress who shared an apartment with a Romanian woman, Ana Cumpanas, a brothel owner known as Anna Sage. She recognized Dillinger and tipped off police who passed her on to Melvin Purvis. Sage later informed Purvis that Dillinger was to take her and his girlfriend to a movie, and that she could be identified by her attire. She would become forever known as "the woman in red," although she actually wore an orange skirt and white blouse that night. John Dillinger was soon dead in a hail of gunfire outside Chicago's Biograph Theater (Girardin 1994, 169–173, 217–230).

Melvin Purvis

Dillinger's nemesis was the FBI's Melvin Purvis (1903–1960) who became a special agent in 1927 and soon headed investigative offices in Cincinnati, Washington, Oklahoma City, and Birmingham before taking charge of the Bureau's most high-profile office in Chicago in 1932. In just eight years, he captured more FBI-designated public enemies than any agent in the history of the FBI ("Melvin Purvis" 2014).

Standing just five feet nine inches and weighing only 140 pounds, Purvis appeared an unlikely hero, and the newspapers sometimes called him "Little Mel." They also dubbed him "Nervous Purvis"—especially after he admitted that the cigar shook in his mouth that fateful night when he lit it to signal agents that he had identified Dillinger. Purvis would later write, with the candor of a man of integrity:

> The romantic newspaper writers have, on occasion, pictured me in their deathless prose as a combination of Wild Bill Hickok, Nick Carter and Frank Merriwell. Nothing could be farther from the truth; I am not a gun fighter; I am not a wily sleuth; and I am not a Fearless Frank. To tell the truth, I was thoroughly frightened every time it fell to my lot to carry a gun on a foray of any kind.
>
> There were men who served with me who never knew the emotion of fear. They belonged to the glory company of history, those joyous daredevils who, from time immemorial, have been vainly waiting for a commander to order a charge on the gateways of hell. I admire them, but my nervous system is not built that way. I never led a raid without apprehension, and only the knowledge that there was a job there to do kept me functioning in the death-haunted sectors where bullets were flying.

Purvis added, "A sense of responsibility is often an effective substitute for courage" (Purvis 1936, 246–247).

So, as he and other agents moved in on Dillinger, on the sidewalk outside the theater, Purvis would later admit, "I was very nervous; it must have been a squeaky voice that called out, 'Stick 'em up Johnny, we have you surrounded.'" Dillinger drew his automatic pistol, but it never fired. Public Enemy Number One was shot by Purvis's men and lay dying. "Later after leaving this scene," Purvis wrote, "I tried to button up my coat and found both buttons gone. Apparently I had grabbed for my gun without thinking, and I am frank to say that I do not know how it came into my hand" (Purvis 1936, 275–277).

Purvis's self-effacement notwithstanding, he gained tremendous notoriety for his lead role in bringing down John Dillinger, and—three months later—Charles "Pretty Boy" Floyd, killed in an Ohio farm field. J. Edgar Hoover steamed at the attention given Purvis. He wanted his brave agents to remain faceless so he would get credit for their achievements. So it was that Hoover maneuvered behind the scenes

Figure 1. Melvin Purvis autographed photo (to close friend James McLeod) courtesy of McLeod's daughter Florrie Ervin; copy photo by Joe Nickell.

to keep Purvis from the next target, George "Baby Face" Nelson (real name Lester Gillis). When Nelson shot agent Sam Cowley (after Nelson turned a car chase into a trap), a scheming Hoover ordered Purvis to stay at the hospital with Cowley while urgently scrambling less experienced agents to pursue Nelson. When, as Cowley lay dying, Purvis vowed to a *Chicago American* reporter that he would get Nelson, Hoover had had enough (Purvis 2005, 259–260).

Hoover

John Edgar Hoover (1895–1972), the man who would become "the nation's top cop," had parlayed his Master of Laws degree into a job with the Department of Justice in 1917. Thus escaping the draft, he pursued draft evaders, suspected German partisans, and communists on the home front. A biographer (Hack 2004, 54) observed:

> The fledging civil servant had developed an unpopular habit of ridiculing those who dared to disagree with his interpretation of the law, dismissing them with a flutter of the hand as if clearing the air of annoying cobwebs.

It was a sign of things to come.

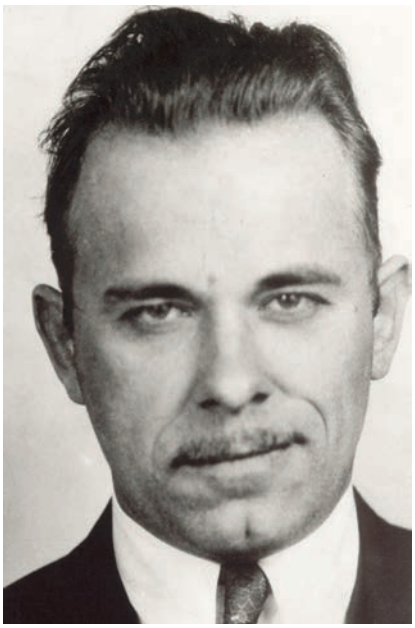
Working twelve-hour days every day of the week, Hoover received promotions for his industry. He lobbied for, and obtained, the job of assistant chief of the Bureau of Investigation, and, in 1924, became director, charged by Attorney General Harlan Fiske Stone with implementing a laundry list of ethical reforms. After minor name changes, it became the Federal Bureau of Investigation in 1935. Meanwhile, Hoover sought to improve efficiency and obtain laws permitting agents to make arrests and carry guns, as well as making the slaying of a special agent a federal offense. And he allowed Charles Appel—an accountant as well as a document examiner—to found the Bureau's now-famous crime laboratory, beginning with a borrowed microscope (Gentry 1991, 124–148).

In 1927, a handsome young lawyer named Clyde Tolson caught Hoover's eye, and *in just two years* he would become in rapid succession an agent, a staff supervisor, special agent in charge of the Buffalo office, and finally assistant director! Thus began a friendship—some say a romantic liaison—that lasted until Hoover's death. Neither married, and the two dined together, spent weekends together, took vacations together, albeit while keeping separate residences; Hoover lived with his mother until her death in 1938. Hoover's sexual orientation has been made an issue due to his public crusade against homosexuals—his professed contempt of them being second only to his hatred of Communists. Hoover refused to allow gays into the FBI, subverted their positions elsewhere,

and sometimes blackmailed them into becoming informants (Hack 2004, 281–282; Gentry 1991, 90; 307–310, 412–413).

Hoover also took an interest in another young lawyer, the dashing Melvin Purvis to whom the Bureau director wrote (April 3, 1934), ". . . get Dillinger for me and the world is yours" (Summers 1993, 70). Things soured with the shootout-turned-fiasco at Bohemia Lodge, and Hoover sent agent Sam Cowley to assist. When Purvis did succeed against Public Enemy Number One, Hoover briefly feted Purvis and Cowley in Washington, privately praising Purvis for "almost unimaginable daring" (Summers 1993, 72). Unfortunately, the press kept referring to Purvis—not Hoover—as "The Man Who Got Dillinger," and when Purvis also brought down Pretty Boy Floyd and became a media sensation, Hoover's jealous anger finally boiled over.

Hoover secretly demoted Purvis—one of the greatest G-men of all time—and began to load him with demeaning assignments and to rewrite history, omitting Purvis's name from the Dillinger saga.



John Dillinger

Hoover secretly demoted Purvis—one of the greatest G-men of all time—and began to load him with demeaning assignments and to rewrite history, omitting Purvis's name from the Dillinger saga. An early example of Hoover's spite came following Purvis's telegraphed resignation in 1935, when he accepted a lucrative offer from Post Toasties cereal. Comic strips featured Purvis's exploits and promoted the Melvin Purvis Junior G-Man Club, which offered—in exchange for cereal box tops—such items as a fingerprint kit, code wheel, invisible ink and developer, and a Secret Operator's Manual, plus Junior G-Man badges and Secret Operator badges for girls as well as boys. Although this was wonderful promotion for the FBI, Hoover nevertheless tried to find a pretext for challenging the little toy badges. He had to content himself with getting Post Toasties to remove any mention of the FBI in their Junior G-Man promotion (Purvis 2005, 283–284, 295).

While pretending to be friendly with Purvis, Hoover in fact launched an unrelenting sneak crusade against him, sabotaging Purvis's career opportunities whenever possible, spreading rumors, and encouraging agents to look for anything negative about this principled American hero. Although successful in blocking his appointment as a federal judge, undermining Hollywood offers, and the like, Hoover was unable to thwart Purvis's appointment to the Military Intelligence Division during World War II. Purvis instigated surveillance of Martin Bormann, helped organize a War Crimes Office, investigated the report of Hitler's death, and assisted with the Nuremburg trials. Unfortunately, Colonel Purvis's service records were destroyed in a fire, so crucial details are lacking, but he served with distinction (Purvis 2005, 260–313).

Months after Purvis had resigned from the FBI, Hoover had been humiliated at a senate subcommittee hearing on appropriations when a senator pressed him on whether America's top cop had ever made an arrest. Hoover was forced to reply—four times—that he never had, that he was a desk-bound administrator. He probably never in his life wished more for credentials like Purvis's. The very next morning Hoover ordered his agents to notify him immediately when targeted gangster Alvin Karpis was about to be arrested. Three weeks later, Hoover arranged to be on scene, kept safely out of harm while brave agents pulled in front of Karpis's car and arrested him with drawn guns. But in the official version, it was Hoover who lunged at Karpis and grabbed him before he could reach his weapon. (Actually Karpis's two rifles were in the trunk.) "Karpis Captured in New Orleans by Hoover Himself," headlined the *New York Times*. Years later, in an autobiography, Karpis would make fun of these lies (Gentry 1991, 182–195).

Purvis committed suicide on February 29, 1960.[1] After Purvis's funeral, his widow gathered her three sons and sent a terse telegram to Hoover: "We are honored that you ignored Melvin's death. Your jealousy hurt him very much but until the end I think he loved you." Hoover did not respond (Purvis 2005, 329). (In 2004, I spent most of a week in Florence, South Carolina, where Melvin Purvis—after resigning from the FBI—had raised a family and died. From March 27 to 31, I visited his former home, talked with people who had known him, made a pilgrimage to his grave, and conducted research at both the county library and courthouse—being permitted at the coroner's office to make a supervised

examination of the file on Purvis's death. I obtained a copy of the Coroner's Inquest report [1960], and I held in my hand the bullet that killed the great G-man.)

Dillinger's Ghost?

Some conspiracy theorists maintain that it was not Dillinger who died near the Biograph Theater. Rumors circulated after his death that the FBI shot down the wrong man. They cite discrepancies in the description of Dillinger versus the autopsy that "point to Dillinger's permanent escape and disappearance" (Nash 1978, 394). Some have postulated that the FBI had actually killed a small-time hoodlum by the name of Jimmy Lawrence "and was covering up its tracks" (Ogden 2009, 117). This is a familiar type of conspiracy claim (Nickell 1993).

In fact, Dillinger's body was identified by his own father—once he had looked past the minor plastic surgery—and he had his son's coffin covered with three feet of concrete to keep the curious from digging it up (Ogden 2009, 117). A death photo leaves little doubt the corpse was indeed Dillinger's, and fingerprints left no doubt at all: The tiny scars that obliterated his prints' major pattern features (called "cores" and "deltas") did not prevent comparison, and the postmortem prints unquestionably match those of Dillinger on his FBI wanted poster. As to "Jimmy Lawrence," that was simply the alias Dillinger was using at the time of his death (Kurland 1994, 101–108; Girardin 1994, 220; Gentry 1991, 173).

Now that we know "Dillinger" was indeed Dillinger, we need not be mistaken as to just whose ghost allegedly visits Dillinger's death site. According to ghost raconteur Tom Ogden (2009, 117): "Within months of Dillinger's death, people began to report seeing a misty male form floating down the alley where he died. Sometimes it would pull a gun before it fell to the ground and faded away." In other words, the alleged ghostly drama simply repeated the drama people had read about.

But did these paranormal reenactments actually occur? Ogden is contradicted by another writer, Ursula Bielski (1998, 134), who insists:

> In light of the mania following Dillinger's death, it seems almost unbelievable that no unusual phenomena were reported at the shooting site in the immediate months and years that followed. In fact, it was not until the 1970s that passersby on north Lincoln Avenue began to spot a bluish figure running down the alley, stumbling, falling, and disappearing.

Hauck (1996, 154) repeats claims that Dillinger's ghost "has been seen racing down the alley."

In fact, however, the reported ghostly reenactments are no such thing, since Dillinger *never ran* and was *never in the alley*. For these facts, we turn to the first-hand account of his death by Melvin Purvis, leader of the team of G-men who brought down John Dillinger.

As Purvis wrote in his *American Agent* (1936, 275–276), "I was about three feet to the left of him," when agents closed in on Dillinger.

> I had to give the signal to close in then because I had seen the woman at his right [his current girlfriend] tug at his shirt in a furtive sort of way as if to warn him that all was not well. I had seen him reach for his right-hand pocket and give it a slight jerk as if in an effort to draw a gun. When I called out to him he drew his .380 automatic pistol, but he never fired it. He dropped to the ground; he had been shot.

Purvis continued, making clear that Dillinger never ran or even entered the alley:

> He had made a long stride toward the entrance to an alley at the end of which were some of our men. I am glad he didn't get into the alley, as there might have been a cross fire, although we had planned to avoid this as in all cases. Dillinger fell with his head in the alley and his feet on the sidewalk. In his right hand was his gun, and as he fell the elbow hit first, causing a sort of bounce. When his hand bounced up I took the gun from it. Turning him over, we immediately determined that he had no other weapons. We spoke to him, but he couldn't speak. An ambulance was called.

So the alleyway ghost is a figment, obviously based on misreports of Dillinger's slaying. Besides, "In recent years . . . paranormal tales of that alleyway have lapsed . . ." (Bielski 1998, 134). Let us hope that Dillinger's imagined ghost now rests in peace, and let us remember Purvis and Hoover in the contrasting ways that each deserves. ■

Note

1. A longer, online version of this article discusses the controversy over Purvis's death and is available on csicop.org.

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Sheaffer's "Psychic Vibrations" column has appeared in the SKEPTICAL INQUIRER for nearly forty years; its highlights have now been published as a book (Create Space, 2011). Sheaffer blogs at www.BadUFOs.com, and his website is www.debunker.com.

UFO Conspiracies at the UFO Congress

Again this year, I attended the largest UFO conference in the world, the International UFO Congress Conference and Film Festival near Phoenix, Arizona. Unlike previous years, I was not able to attend all five days. I won't try to summarize each talk, and space only permits a few highlights, but there was obviously a lot going on—most of UFOlogy's "heavy hitters" were present.

The first thing to catch my eye was the display in several places of what appeared to be almost the same plastic aliens photographed by Boyd Bushman, supposedly at Area 51 (see this column, March/April 2015). These cheerful fellows were fifty-four inches tall and the work of Australian artist Alan Groves, who claims to have had alien experiences. He said that he did these sculptures over the past two years. I asked him, "So these are not the same plastic aliens that Boyd Bushman photographed?" "Not the same ones," he replied. "Mine are much better." They are being sold at www.Zetan.net for $488.00 each.

People crowd in to check out the "wishing machine" of Joshua P. Warren.

A small army of plastic aliens seems to be guarding the premises.

Photos by Robert Sheaffer

Speaker Derrell Sims calls himself "the Alien Hunter." He claims to have worked for the CIA, but he doesn't have any proof. Sims had been lying somewhat low in UFOlogy after some earlier controversies but is now boldly moving into the territory recently occupied by his former colleague, the late Dr. Roger Leir. He talked about alien implants galore, adding that doctors often steal the alien implants after the surgery to remove them.

Sims said that recently a red-light camera in Los Angeles supposedly captured the image of an alien in the back seat of a car, abducting the driver. He showed some bad alien photos as well as photos of some bruises caused by alien hands on people's bodies. When UFOs in photos have blurry edges, he said it means they are "in transit" (whatever that means) and those with sharp edges are "probes." "MIB Sperm Detection" (whatever that is) provides documentation of alien sexual assault. One woman was forced to copulate with a creature looking like a pig. One of his abductees assaulted his captor with a sword. In the morning, he found a lump of alien DNA on the floor. Unfortunately, it was eaten by the dog, which became sick soon afterward then died. (The dog ate my alien DNA?)

Sims told scary, home-style stories in which the alien agenda is always hostile. Aliens sometimes masquerade as angels but never vice versa. In fact, aliens flee when angels appear, according to Sims.

Joshua P. Warren spoke on the Brown Mountain lights. He has made extraordinary claims on just about every paranormal-themed cable TV show there is. He mentioned the United States Geological Survey (USGS) investigations of the alleged lights, and just about everything he said about

that was counter-factual. The USGS could, and did, explain the lights and this has been known for decades (see, for example, http://skeptoid.com/episodes/4226).

Warren thinks that the lights are naturally produced plasmas and that reports of strange military activity in the area means that the military wants to study the lights. (He apparently believes the military would bring in hundreds of soldiers to study the lights instead of a few physicists.) He showed a couple videos of insect "UFOs," then talked about the "Wishing Machine" he is selling, which operates using the "Law of Attraction." He also teaches an expensive seminar on how to use that machine.

Mark Pilkington from the United Kingdom, whose book (now also a movie) *Mirage Men* purports to show how military and intelligence operators have shaped and exploited belief in UFOs, called his talk "The Abuses of Enchantment." While I can agree that such involvement has been shown to happen a few times, most of them outside the United States, I don't see how this has any real significance for our understanding of the UFO circus. For example, Pilkington cited a Rand Corporation paper on the potential value of exploiting local superstitions but did not show that this ever had been done. I had a brief opportunity to speak to him afterward. I said I didn't think such instances were of much significance to the UFO scenario as a whole, and he agreed. I think what he was saying was that military and intelligence involvement was responsible for shaping the public perception of a UFO cover-up, which is at least partly true. Pilkington is not a man who gets directly to the point, but if you can figure out what he means he seems to be pretty skeptical. Somebody asked him about crop circles—are there any that are not of human origin? Pilkington's answer: No, except for a few simple ones that may be of meteorological origin. (Thus none are made by aliens.)

However, good old Stanton Friedman, who calls himself the Flying Saucer physicist, wasn't having any of this. During the Q&A period (Pilkington was among the few speakers to actually allow time for a real Q&A), Freidman laid down the gauntlet: this was "effective propaganda," he said, and asked Pilkington "Who are you working for?" You, Friedman said, might be part of the government's disinformation campaign (whether on behalf of the U.K. or U.S. government, he did not specify). Friedman said he is fully recovered from the heart attack he suffered last year, which is very good news. UFO symposia are much more interesting when the eighty-year-old Friedman is there.

In the opinion of many people, the most significant event of the UFO Congress was the first public appearance in many years of Bob Lazar, famous for his wild claims about alien saucers and Area 51. George Knapp, a well-known television journalist in Las Vegas, gave an introductory speech in which he told a lot of alien jokes that were mostly pretty funny. Knapp is certainly a good entertainer. Back in 1989, he was the first to interview Bob Lazar—whom he now compares to Edward Snowden, the NSA whistle-blower. Knapp says that the comparison is valid. He defended Lazar's reputation against supposedly "unfair" charges. Knapp says he knows of dozens of Area 51 veterans who confirm Lazar's descriptions at least in part.

Darrell Sims told scary, home-style stories in which the alien agenda is always hostile. Aliens sometimes masquerade as angels but never vice versa. In fact, aliens flee when angels appear, according to Sims.

Knapp's talk was followed by a special Q&A session with Bob Lazar and George Knapp. Questions for Lazar had to be submitted in advance at the registration desk, for Knapp to select which ones to ask him. Asked what he is currently doing, Lazar explained that he is basically in the business of selling radioactive and otherwise dangerous stuff. He said, "I unfortunately live in Michigan." He says he moved there because the state promised aid for his business, but he implied that he was disappointed in what he actually received.

In Lazar's previous home in New Mexico, he had a thirty-foot particle accelerator. It was not explained what he did with such a thing, but apparently he claimed to be using it to derive hydrogen fuel to power automobiles. Referring obliquely to questions about his credentials, he said people told him "you don't act like a physicist." (One of the principal charges is that Lazar's claimed education as a physicist is entirely fabricated; Lazar replied that government agents erased all records of his graduate work at MIT and Cal Tech.) He decried the kind of pompous physicists you meet at Los Alamos and other places, implying "I'm not like them, even though I am educated."

Lazar threw some barbs at John Lear who also tells stories about saucers at Area 51. Lear, Lazar suggested, is not telling the truth. (Apparently the two of them have made up mutually inconsistent fables about Area 51 and thus cannot be reconciled.)

Lazar drew an illustration of a supposed saucer hangar at Area 51, along with several other illustrations, on an easel. These were all ARVs, Alien Reproduction Vehicles. He talked about "gravity amplifiers." They run on element 115 (Lazarium?), of which there were reportedly 500 pounds at Area 51. The craft distorts space-time and thus pushes itself along. Since Lazar first told his fable about element 115, scientists have actually synthesized that element, albeit for an infinitesimally brief period of time. It did not turn out to be a stable element, as Lazar claimed it would be, but decayed in a tiny fraction of a microsecond.

Perhaps the most significant thing

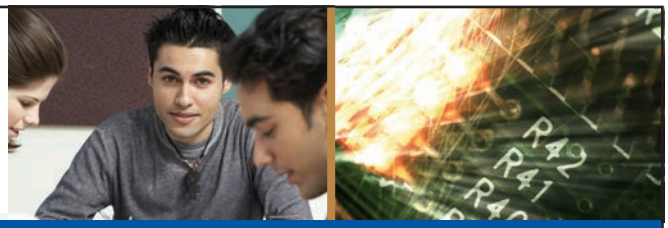
Lazar said, which apparently slipped by without much notice, is *that he has nothing more to say*. Lazar emphasized that he has already spilled all of the beans he has; in the future he might conceivably repeat his story, but he has nothing to add to it. On a UFO panel the following day, Freidman vociferously attacked another panelist, Jeremy Corbell, who was defending Lazar's claims; this resulted in a lot of fireworks.

Awards were given out at the Saturday evening banquet. A "lifetime achievement award" honored the late Dr. Roger Leir, a California podiatrist who would remove what were claimed to be "alien implants" in people. The Film Festival award for best documentary went to the movie *Travis*, which tells the story of the alleged UFO abduction of Travis Walton in 1975 (as does the 1993 Hollywood film *Fire in the Sky*, which Walton says is less accurate in depicting the "facts"). The movie is well made, telling the story of the alleged abduction, albeit by a highly selective presentation of events. Much is made of the six woodcutters, five of whom barely knew Walton at the time, passing a police polygraph test. Surely they would not all conspire together in such a hoax? But this is not as significant as they would make it, because the questions asked were primarily to determine whether Walton (still "missing") was murdered and his body dumped in the woods. Most likely only Walton and his buddy Mike Rogers (driving the truck) were "in on" the hoax—the other five woodcutters had no idea what was going on. Hence they could truthfully say that they didn't murder Walton, and they saw an unknown object in the woods. At least one other person needed to be in the woods to work the light show.

However, the movie completely concealed the fact that Walton had flunked a polygraph examination paid for by the *National Enquirer* and administered by the most experienced examiner in the state of Arizona, who concluded that Walton was practicing "gross deception." The then-influential UFO group APRO (which was promoting Walton's story) and the *National Enquirer* concealed this embarrassing fact. Walton later passed a different polygraph test (for which he had adequate time to prepare) but then failed one on the 2008 TV show *Moment of Truth*. In reality, if someone is anticipating taking a polygraph exam, and practices for it, they have a very good chance of fooling the examiner. I have summarized the skeptic's case against the Walton "abduction" at http://www.debunker.com/texts/walton.html.

The movie *Travis* clearly displays Philip J. Klass Derangement Syndrome, spending about ten minutes raving about the late dean of UFO skeptics and denouncing him (the Walton camp hates Klass because he blew the whistle on Walton's polygraph failure and other facts that they concealed). They make much of the unfounded claim that Klass tried to bribe Steve Pierce with $10,000 to say that the Walton "abduction" was a hoax. (I have already shown that archive documents support Klass's version of events at http://goo.gl/Gc84vW.) Walton is planning a big shindig this November in his hometown of Snowflake, Arizona, to commemorate the fortieth anniversary of aliens allegedly snatching him up. ■

SCIENCE AND THE PUBLIC



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[NOTES ON A STRANGE WORLD

MASSIMO POLIDORO

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The Mystery of *TJIPETIR*

Mysterious rectangular rubber-like blocks, with the enigmatic word *TJIPETIR* engraved into them, have been washing up for the past few years on the beaches of northern Europe. Over a century old, it has been suggested that the blocks could have come from the site of the 1912 sinking of the *Titanic*. But reality usually has a way of turning up stranger than fiction.

This is a mystery that for a long time has left anyone finding such blocks puzzled, whether they were located in France, Spain, or Germany. What are these strange rubber-like tablets? And what does the word *TJIPETIR* mean?

One morning in 2012, a British woman, Tracey Williams, took her dog for a walk around her property on a beach in Newquay, Cornwall, and found a black block just washed ashore by the sea. It reminded her of a chopping board, but it had that inexplicable word engraved at the center. She decided to take it home with her as a strange souvenir from the sea.

Things took a different turn when, a few weeks later, Williams found another block on another beach alongside bales of rubber. "Finding one was interesting," said Williams, "but finding two was rather odd." The coincidence piqued her curiosity, and the woman started to investigate the nature and origin of the mysterious blocks.

The first thing she realized was that the blocks were not technically rubber but instead gutta-percha, the gum of a tree found in Malaysia used in the nineteenth and early twentieth centuries to insulate telegraph cables on the seabed and to make golf balls, teddy bear noses, picture frames, and many other things.

Credit: Courtesy of Tom Quinn Williams/Tjipetir Mystery Facebook page

Williams was not new to unusual discoveries on the beach. "We used to have beach combing expeditions," she said, "and we'd always have treasure hunts," Williams told Public Radio International (PRI). Several years ago, Williams began to find pieces of LEGO on the beaches of South Devon. Not having access to the Internet at the time, she failed to understand their origin. Then, in 2010, she moved to Cornwall and was amazed to discover similar LEGOs showing up on the shore there.

Thanks to an Internet search, she found that several years earlier a Japanese ship had come across very rough seas and had spilled some of its cargo made of LEGO bricks. So she set up a Facebook page titled "Lego Lost at Sea" and started to receive reports from other people who had found similar bricks, and was thus able to create a map of how the LEGO wrecks had distributed themselves along the coast.

With the two blocks of *TJIPETIR*, Williams decided to follow the same road. She created another Facebook page devoted to the new mystery and wondered if others had found similar boards. The answers started to arrive quickly. Others had found the *TJIPETIR* blocks on other coasts of Britain, but also in France, Holland, Germany,

The Real Wreck of the *Titanic*

The sinking of the *Titanic*, which took place in the North Atlantic on April 15, 1912, was considered at the time the greatest maritime disaster in history. Of the 2,200 people on board only 700 were saved. In the weeks after the sinking, the ships that crossed the Titanic's route found dozens of frozen bodies still floating, clinging to the wreckage of the ship or lifesavers. Some of those objects—panels, pillars, lifeboats, and other artifacts—were recovered and soon became collector items. Then in 1986 when the ship wreck was located on the ocean floor, operations began almost immediately, more or less authorized, for the recovery of objects. A French company, the IFREMER, brought to light more than 1,800 artifacts, including a porthole, a couple of taps, a crane, pans, dishes, and more. To date, 5,500 objects—including a section of the hull twenty-six meters long and weighing seventeen tons—have been recovered. However, many people, such as the wreck's discoverer, Robert Ballard, believe that the ocean floor should have been preserved as a museum.

Norway, Sweden, and Denmark. Often the blocks included bales and rolls of rubber. "The TJIPETIR story really did intrigue me. I have been fascinated," she said. "And it has taken over my life slightly in recent years," Williams told PRI.

It was at this point that some began to speculate that the gutta-percha could have come from the *Titanic*. The French newspaper *Le Figaro* did an investigation and discovered that the ship's manifest showed that the *Titanic* had indeed been carrying gutta-percha and bales of rubber. "I'm not saying that these blocks come from the Titanic," François Galgani, a researcher for IFREMER, the French company that had contributed to the discovery of the wreck of the *Titanic* in 1986, said at the time, "but there is nothing allowing us to discard this possibility."

The idea began to take shape. Since gutta-percha blocks disintegrate soon after being exposed to light, their antiquity suggested that they had remained hidden for a long time, for example inside the bowels of a ship. The *Titanic*, which has been lying on the ocean floor for 103 years now, is falling apart, and the dissolution of a wall might have caused the blocks to resurface. "It was like a big jigsaw with lots of pieces missing," said Williams, who was also fascinated by the *Titanic* hypothesis. However, the turning point came in the summer of 2013, moving the lost transatlantic vessel out of the way for good.

Williams was approached by two people who wanted to remain anonymous but offered an explanation for the blocks: They were released during a salvage operation on the wreck of a Japanese ship, the *Miyazaki Maru*, a passenger ship that was sunk during World War I.

In May 1917, the ship was 150 miles from the Isles of Scilly, southwest of England. German submarine U-88, captained by Walther Schwieger, who was one of Germany's most successful U-boat aces, hit the *Miyazaki Maru* with a torpedo. Only two years earlier, the same Schwieger had sunk the RMS *Lusitania*, a liner bound for Liverpool, causing the death of 1,100 people, including more than 100 Americans, an episode that is thought to have hastened America's entry into the war.

When *Miyazaki Maru* sank, it took with it eight victims and a cargo that included blocks of gutta-percha. A salvage operation in 2008 probably released the rubber blocks, which started to float on the waters of the Atlantic. Even Alison Kentuck, the British government's Receiver of the Wreck—the official who administers wreck and salvage laws within U.K. territorial waters—also said it is most likely the blocks are indeed cargo from that ship.

"When we are made aware of wreckage we conduct research to find the owner," she said.

> We look at the age of the items, where they could have come from, and examine any markings. Our findings with these particular items pointed towards that particular wreck. So although we have not confirmed it, the *Miyazaki Maru* is our favored possibility as the source of the washed-up blocks.

However, according to oceanographer Curtis Ebbesmeyer, who specializes in tracking flotsam, the *TJIPETIR* blocks may have been washing up on beaches for centuries. Ebbesmeyer told the BBC:

> Based on the findings so far, they are clearly being fed into the hemispheric ocean circulation. It only takes 25 years for flotsam to go around the world, and they've probably been around long enough to go around the world three times. They're still in good condition after all these years, which is unusual. They're probably one of the great pieces of flotsam that people may be finding 100 years from now.

Several people also reported finding *TJIPETIR* blocks back in 2008, before the current salvage operation is thought to have begun on the *Miyazaki Maru*. One person has come forward to say he found a block more than thirty years ago and used it as a chopping board to gut fish on his fishing boat.

But what does that mysterious inscription, *TJIPETIR*, mean? This turns out to be the name of a rubber plantation in West Java, Indonesia, which operated in the late nineteenth and early twentieth centuries. The gutta-percha was a rubber-like substance that was in fact found in the Malay Peninsula and in Malaysia, and it was used before the invention of plastic.

"The important thing is, for me, that the story's only just beginning," concluded Tracey Williams to PRI. "We might know the name of the ship, but there are the stories of everybody on board that ship, and what happened to it. And I want to find out." ■

[SCIENCE WATCH KENNETH W. KRAUSE

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Diet-Heart: A Hypothesis in Crisis? Part 3: The Macronutrient Wars Rage On

Controversy has beset the diet-heart hypothesis (D-Hh) from its very inception. Throughout the 1950s and 1960s, the idea's founder, Ancel Keys, was accused of "cherry picking" evidence to advance his career. If the Maasai tribe of Kenya and Tanzania can subsist healthfully on raw milk, meat, and blood, the detractors prodded, why should Westerners shun butter, omelets, and cheeseburgers?[1] Since then, every official recommendation urging Americans to consume less cholesterol and saturated fatty acids (SFAs) to reduce their risks of coronary heart disease (CHD) and cardiovascular disease (CVD) has suffered incessant criticism.

In recent months the attacks have only intensified. Cardiologist Aseem Malhotra scolded researchers for their allegedly outdated obsession over the link between saturated fatty acids and low-density lipoprotein cholesterol (LDL-C). Yes, consumption of SFAs tends to elevate blood LDL-C levels, he conceded. But that increase "seems to be specific to large, buoyant (type A) LDL particles," and not the "small, dense (type B) particles" implicated in cardiovascular disease (Malhotra 2013). More dangerous type B particles are actually "responsive to carbohydrate intake," Malhotra insisted. Indeed, "saturated fat has been found to be protective."

So, while the majority continues to condemn the saturated fatty acids typically found in animal products and tropical oils, the minority has instead begun to impugn carbohydrates, particularly the refined variety favored by Western palates. Most researchers agree that excess energy from whatever sources leads to obesity, diabetes, and heart disease. But authors of the official guidelines spurn minority influences and continue to recommend replacement of saturated fatty acids with their polyunsaturated fatty acid (PUFA) counterparts.

In response, indignant writers have pummeled the professional literature with papers hostile to official policies. Following a meta-analysis of twelve studies involving 7,150 participants, Austrian nutritionist Lukas Schwingshackl argued that replacing saturated fatty acids with PUFA "showed no significant benefit in the secondary prevention of coronary heart disease" (Schwingshackl and Hoffmann 2014). National Institutes of Health biochemist Christopher Ramsden raised the stakes after examining newly recovered data from the Sydney Diet Heart Study. He decided not only that linoleic acid (LA), a common omega-6 (*n*-6) PUFA, "did not provide the intended benefits," but also that its substitution for saturated fatty acids "increased all-cause mortality, cardiovascular death, and death from coronary heart disease" (Ramsden et al. 2013). Swedish researcher Uffe Ravnskov concurred, emphasizing studies associating consumption of PUFA with inflammation, immune system suppression, decreased high-density lipoprotein cholesterol (HDL-C) levels, and an increased risk of many cancers (Ravnskov et al. 2014).

At that point, CVD researcher (and Ravnskov coauthor) James DiNicolantonio stepped in to summarize the detractors' position. He stressed first that the current outbreak of Western diabetes and obesity derives from overconsumption of carbohydrates, not saturated fatty acids. Second, the replacement of SFAs with carbohydrates (CHO) only increases small, dense LDL particles and shifts the overall lipid profile toward decreased HDL-C, elevated triglycerides, and an increase in the apolipoprotein B-to-apolipoprotein A-1 ratio (ApoB/ApoA-1). Third, the substitution of saturated fatty acids with *n*-6 PUFA only reduces HDL-C and raises the risk of cancer, CHD, and overall mortality. Finally, he argued, the PREDIMED and Lyon Diet-Heart studies showed that Mediterranean-style diets reduce cardiovascular events, cardiovascular mortality, and all-cause mortality relative to either low-fat diets or the American Heart

Association's "prudent" diet. Thus, DiNicolantonio concluded, those responsible for the official guidelines "should assess the totality of evidence and strongly reconsider their recommendations" (DiNicolantonio 2014).

When interviewed, DiNicolantonio maintained that the D-Hh "has never been proven." Saturated fatty acids might raise LDL-C levels, he advised, but an increased risk of heart disease simply doesn't follow. Small, dense LDL particles are more atherogenic, or "more capable of penetrating a damaged endothelium"—which likely results from a "high refined carb/sugar diet," among other things. To the contrary, he argued, the saturated fatty acids found in whole, unprocessed foods like red meat can provide immune-boosting properties and stability against oxidation.

Meanwhile, minority support mounted. In his meta-analysis of forty-nine observational studies and twenty-seven randomized controlled trials, Cambridge University epidemiologist Rajiv Chowdhury found null associations between coronary risk and both total saturated fatty acids and monounsaturated fatty acids (MUFA), along with a statistically non-significant association between coronary risk and PUFA supplementation (Chowdhury et al. 2014). Likewise, Tulane University epidemiologist Lydia Bazzano conducted a twelve-month randomized, parallel-group diet intervention trial of 148 healthy men and women and found that participants who completed the low-carbohydrate regime lost more weight and had fewer heart-disease risk factors compared to subjects who completed the low-fat program (Bazzano et al. 2014).

The majority's response was immediate. Harvard University nutritionist Maryam Farvid performed her own systematic review and meta-analysis of prospective cohort studies to examine the effect of increased LA consumption by healthy subjects. Contrary to Ramsden's and Chowdhury's findings, Farvid revealed a linear inverse association between the predominant *n*-6 PUFA and heart disease. Linoleic acid's "cardio-protective effects," she argued, included a "9% lower risk of total CHD and 13% lower risk of CHD deaths" with a "5% increase in energy from LA, replacing SFA" (Farvid et al. 2014).

Although some news media seized on the study results to extol the virtues of bacon and eggs breakfasts, Lydia Bazzano had actually urged subjects in both the low-fat and low-carbohydrates intervention groups to consume less saturated fatty acids and more unsaturated fat.

While acknowledging Ramsden's and Ravnskov's concerns relating to LA, Farvid nevertheless resolved that such fears remained unsupported by both prospective studies and randomized controlled feeding trials. Even so, she conceded, "the effects of LA on heart disease risks are difficult to predict," and diets high in linoleic acid may increase lipid oxidation and "play a role in the pathogenesis of cancer."

Farvid also distinguished her analysis from those of her minority predecessors. Ramsden, she noted, based his results primarily on one short-term trial from the 1960s restricted to a small sample of unhealthy men. And because partial hydrogenation of vegetable oils was then common, she suggested Ramsden's findings might have been confounded by the *trans*-fats found in margarines high in lineolic acid. Chowdhury, on the other hand, based his analysis on a limited number of studies and was unable to compare linoleic acid with saturated fatty acids or any other macronutrient. In a separate critique, Walter Willet—Farvid's coauthor and Harvard colleague—accused Chowdhury of committing "multiple serious errors and omissions" and creating unnecessary confusion. When saturated fatty acids are replaced with PUFA or MUFA in the form of olive oil, nuts, and other plant oils, he disputed, "we have much evidence that risk will be reduced" (Willet 2014).

The Bazzano study's relevance to the D-Hh and the guidelines are less clear than many imagine. Although some news media seized on the results to extol the virtues of bacon and eggs breakfasts, for example, Bazzano had actually urged subjects in both the low-fat and low-carbohydrates intervention groups to consume less saturated fatty acids and more unsaturated fat (ABC News 2014). Further, the low-fat cohort was advised merely to diminish overall fat intake to 30 percent of total calories, which is "hardly low," as New York University professor of nutrition Marion Nestle reminded me.

An interesting variation on the minority theme alleges that saturated fatty acids consumed in the diet do not affect saturated fatty acids levels in the blood, and that excessive intake of refined carbohydrates does raise either SFA or palmitoleic MUFA plasma levels via *de novo lipogenesis* in the liver, thereby increasing the risk of heart disease (Kuipers et al. 2011; Volk et al. 2014). But James Kenney, nutrition researcher at the low-fat advocacy Pritikin Longevity Center, judges this argument a "gross over-interpretation of the data." Yes, the liver will convert sugar to both saturated fatty acids and MUFA when its glycogen stores are maximized. Nonetheless, Kenney told me, mere trivial portions of ingested carbohydrates will be converted, and only when consumed far in excess of energy needs. Regardless, he added, "low-fat/high-CHO diets composed of vegetables, whole-grains, and fruit decrease total cholesterol and ApoB-containing lipoproteins, reduce inflammation, and may actually reverse atherosclerosis."

So where does the D-Hh stand at the dawn of 2015? My conversations with the experts could not have yielded more starkly conflicting opinions. Ac-

cording to Ravnskov, for example, "the diet-heart idea is the greatest medical scandal in modern time." By contrast, Tufts University researcher Alice Lichtenstein—instrumental in generating the American Heart Association's most recent guidelines—wouldn't dignify minority rhetoric with a response. She maintains that "the observational and intervention data are entirely consistent" and "support substituting PUFA for saturated fat to decrease the risk of CVD." Kenney was less reluctant to characterize minority views as "fringe" and "pseudoscientific."

Neither faction is likely to abandon its position soon, so the general public is left shrugging its collective shoulders. Nonetheless, important inferences can be drawn from a century's worth of diet-heart literature. With respect to biomarkers, we might reconsider our preoccupations with LDL-C and HDL-C per se. Non-HDL-C (total cholesterol minus HDL-C) and apolipoprotein B are more revealing indicators of risk and, correspondingly, particle quantity is more critical than size. Concern also grows that, while saturated fatty acids and monounsaturated fatty acids increase HDL-C, much of that HDL-C can be dysfunctional and actually pro-atherogenic.

As intense friction between research communities continues to mount, the USDA Dietary Guidelines Advisory Committee (DGAC) has proposed meaningful revisions for 2015 (Scientific Report of the 2015 DGAC 2015). Recommended ceilings for the consumption of dietary cholesterol—currently set at 300 milligrams per day—will likely be rescinded, overturning forty years of advisory precedent. Further restriction of refined sugars was also advised. On the other hand, the Committee apparently remains committed to the D-Hh and long-standing recommendations to reduce intake of SFA, though not total fat.

Beyond that, the inherent limitations of nutrition science tend to frustrate the public's demand for concrete conclusions. Confounding factors, including genetics, are difficult to both identify and account for, especially in cross-sectional observational studies. Assessing the significance of any single risk factor for a chronic disease of multifactorial etiology is a knotty problem at best. And because people consume foods rather than mere nutrients, intake itself complicates the issue. High-fat diets, for example, might be loaded with sugar too, and they are often low in fiber, antioxidants, flavonoids, folate, and carotenes. Study methodologies vary considerably as well, and participant behaviors often render findings non-replicable and scientifically suspect. Finally, given the establishment of a paradigm like the D-Hh, ethical considerations often make meaningful test conditions impossible.

But diet and daily behaviors are paramount if you want to be healthy. First, ignore popular media, since some truths don't sell advertising. Second, eliminate *trans*-fats unceremoniously. Otherwise, focus on foods over fatty acids and remember that humans never evolved to consume refined fats and oils. Third, learn to prepare and spice lean, unprocessed meats and fresh vegetables to otherwise unembellished satisfaction. Add a little fruit and exclude everything else—especially refined sugars and starches. Finally, exercise regularly, avoid excess adiposity, and don't smoke. With that, what within our control could possibly go wrong? ■

Note

1. Indeed, Maasai serum cholesterol levels were minimal. Their autopsies, however, later revealed severe atherosclerotic lesions.

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Acronyms in This Article

CHD	**Coronary heart disease**
CHO	**Carbohydrates**
CVD	**Cardiovascular disease**
D-Hh	**Diet-heart hypothesis**
HDL-C	**High-density lipoprotein cholesterol**
LA	**Linoleic acid**
LDL-C	**Low-density lipoprotein (LDL) cholesterol**
MUFA	**Monounsaturated fatty acid**
PUFA	**Polyunsaturated fatty acid**
SFA	**Saturated fatty acid**

[SKEPTICAL INQUIREE BENJAMIN RADFORD

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A Skeptic's Guide to Ethical and Effective Curse Removal

Q: **My name is Chelsea. I have a curse that was cast on me, my son, and my boyfriend. Would you know of anyone that can help us with this situation? It's only getting worse as the days go by; it is frustrating, very stressful, and affecting our lives in major ways. I've had ten or more different psychic readings and was told by all that someone has been working against me. They all gave the same exact stories of whom and what has been happening. I have witnessed all the changes: the distance between us, confusions, arguments, and tears in all who are involved. We were very close and happy, and now fights out of nowhere just keep popping up. Also our happiness only lasts for forty-eight hours each time then the fights start again.**

A: I get emails like this a few times a year, and they are among the most difficult and heartbreaking pieces of correspondence I see. These requests for help require a delicate balance of several factors. I've struggled with these cases for years: What should I do? Reply with a polite email saying, in effect, "Curses don't exist, don't worry about it"? Reply with something along the lines of "I'm glad you reached out to me; I have greater magic than the person who cursed you. I will remove the curse: just light three candles in your bedroom window an hour before bed and in the morning you'll be fine"?

In theory either of these approaches could conceivably work; in practice neither is likely to help Chelsea or her family. As skeptics we often deal with people who hold false beliefs, and one of the most important lessons is that usually they are not stupid or crazy but merely human, succumbing to cognitive and perceptual errors (or simply incomplete information) that plague us all. Our main goal as skeptics, as I see it, is to educate the public where we can—about psychology, science, skepticism, confirmation bias, critical thinking, and so on—but also to help people.

People who are scared and desperate (to find or contact missing loved ones, in grief, etc.) often seek out psychics for comfort and information. These people don't need didactic discourse on skepticism or logical fallacies. They don't need scorn, mocking, or condescending comments about the absurdity of believing in psychics; they need sensitivity, compassion, and help.

My main job is an editor, writer, and investigator, not a psychologist. But as an investigative skeptic with a background in psychology and years of experience in dealing with others in similar situations, the truth is that I can often help. I can't justify donating and devoting many hours of my time to any stranger seeking assistance. I also don't feel it is ethical to simply ignore a plea for help from someone in genuine distress nor is a short boilerplate email with links to information on curses and psychics on the CSI website or Bob Carroll's SkepticsDictionary.com going to help this woman.

I didn't know exactly why Chelsea believed she was cursed, but I've spoken with others like her and I can imagine how genuinely terrifying it must be to perceive any accident, discord, or bad luck is a malicious sign of evil intent, a reminder that you are powerless in the face of an unseen supernatural force capable of tearing apart your family, harming your health or sanity, or even killing you. I have an unwritten personal and professional obligation to help if I can. I responded to Chelsea later that day with the following response. A one-page email is no substitute for a family counselor, and I can't solve all her problems, but I could do my best to address her immediate situation and offer a skeptical framework for understanding her situation based not on fear or magical thinking but on science and psychology. For more on the sometimes delicate balance between strict skepticism and offering psychological help to people in need, see my article "Playing Witch Doctor: Hidden Ethics in Skeptical Ghost Investigations," in the Fall 2014 *Skeptical Briefs* newsletter.

Dear Chelsea,

I'm sorry to hear about your troubles.[1] Obviously there is something going on,[2] but I'm not sure that the psychics are correct that someone has placed a curse on you. What might have happened is that the psychics you spoke to gave you some information and someone brought up the idea of a curse, and you (not they) suggested who it might be, and they agreed with it and said you were right about the details and the person who is out to get you.[3]

Obviously I wasn't there, and so I don't know what did or didn't happen,[4] but I can tell you that you should be very careful because some psychics will tell a person who is having personal, financial, or relationship troubles that there is a curse on them, and offer to remove the curse for money. This is a scam, and many smart-but-desperate people have been conned out of money, and the psychics sent to jail. Like I said, I don't know if that is what is going on in your case but it might be, so please watch out for that and call the police if someone tries to do that because they are not trying to help you; they are trying to scam you.[5] Some psychics are sincerely trying to help but some aren't, and you often can't tell the difference.

I have studied and researched both psychics and curses, and one thing I can tell you for certain is that the power of curse is proportional to your belief in the curse.[6] This is the same whether it's a voodoo curse, a Gypsy curse, an African curse, or any other kind[7]: the more you believe in its power over you, the more power it has over you. I've spoken to people whose lives have really been turned upside down by this sort of thing, but it was not so much the curse itself but the person's belief in the power of the curse. This is proven science and psychology (in addition to my books I have a bachelor's degree in psychology and a master's degree in science education, so I know what I'm talking about).[8]

I obviously don't know all the details about what's going on in your specific case,[9] but from what you've told me it sounds very similar to others I've dealt with in the past, and I can tell you what has helped those people.[10] Here is what you need to do:

1. Stop going to psychics. They are not helping your situation. If consulting psychics or getting their information solved the problem, then you wouldn't be dealing with this right now. If you have been to at least ten different psychics so far, then you could go to ten or twenty more and there is no logical reason to think that they will help you or resolve the matter. All you are doing is spending your money and wasting your time (and probably making it worse).[11] This is an issue that you can, and will need to, resolve by yourself. You are a strong and smart woman; I know that because you took the time and effort to find me and write to me. You can do this—in fact you're the only person who can.[12]
2. Remember that everyone has some of the troubles you're experiencing some of the time. People have confusions, fights, arguments, and all that whether they are cursed or not; it's just part of life. Sometimes things are good, sometimes things are bad, but either way you need to try to address the root of the problem. A curse can make a problem much worse, from a psychological perspective, but it is not the cause of the fighting—that may be due to relationship issues, money problems, personality conflicts, or any number of other things.[13] There may be some difficult dynamics between your son and your boyfriend, or you and your boyfriend that affect your son. . . . I don't know what

Feedback

1. I wanted to sympathize and assure her that I'm concerned about their welfare and her as a person.

2. I wanted to validate her interpretation that *something* is going on, though I carefully avoided confirming that a curse is causing disruption in her life. Any overt attempt to tell her that she was not experiencing a curse would likely have been met with resistance.

3. Here I addressed (and undermined) one of the key pieces of experiential evidence she interpreted as confirming the curse: the psychics' validation of her information. By planting a seed of doubt and offering an alternate, non-threatening explanation for what she experienced, I hoped to subtly suggest that her interpretation of other curse-related phenomena might also have another rational explanation.

4. I wanted to demonstrate open-mindedness about her situation, and not be aggressively skeptical or dismissive. Telling her "there's no such thing as curses, it's all in your head" would come off as rude and dismissive, and not be helpful to her. A psychologist must understand the worldview of the person he or she is trying to counsel and adapt their information and advice to best suit them.

5. Here I gave her accurate information about psychic scams and left the door open for her belief in psychics; if she has contacted ten or more psychics she believes in them, and this is not the situation for a dismissive or academic debunking of psychics or a discussion of cold reading techniques. I specifically described her as smart, building her self-esteem a bit and reminding her that even smart people can misunderstand situations.

6. My goal here was to establish my bona fides as an expert on the subject. If I want her to believe what I'm telling her and accept my advice to resolve this, she must find me credible. This is not a time for me to be wishy-washy or modest; it's a time for clear authority. Instead of directly debunking the existence of curses, I focused on the psychology of curse beliefs and tell her that she has power over the curse.

7. Chelsea didn't tell me why she believed she was cursed, or by whom, or what type of curse it was. By casting a wide net and explaining that all curses are fundamentally the same, I've covered my bases and assured that she will believe my advice applies to her situation.

8. Again, I'm establishing my bona fides as an authority on the subjects of curses, psychology, and science. I could have included folklore, of course, which would have been even more relevant, but it would not have carried the same

they might be, but please look at those first; maybe even a friend or counselor might help. Fights and conflicts are caused by people, and they can be solved by people.[14]

3. Try not to focus on the negative things, which can bring negativity into your life and make the problem worse.[15] You said that your happiness only lasts forty-eight hours, but don't get it in your head that that's part of a curse.[16] There's nothing magical about forty-eight hours; it's just a pattern you've noticed. If you're doing okay for two days and then forty-eight hours approaches, you may start to look for things to go wrong. Every day has good and bad things in them, and if you focus on the bad things, or let yourself magnify them, then you are creating your own self-defeating thought patterns, what in psychology is called a self-fulfilling prophecy. You need to avoid that. Focus on the good things in your life, the things that are going well.[17]

It won't happen overnight, but from my experience this is what's needed to solve your situation. It's not like suddenly everything is perfect, but what will happen is that if you follow these instructions and you are patient, forty-eight hours without a huge fight will stretch into three days, and then three days will become a week, and after a week or two it will be gone. Of course, like I said, we all have fights and conflicts, so if something comes up, it's not a setback; it doesn't mean it's not working. It just means that you're human! I know these steps are difficult and easier said than done,[18] but if you want to break free from this, this is what you should do. I hope this helps, and please get in touch with me in a few weeks to tell me how it's going.[19]

All best,
Ben Radford
Research Fellow, Center for Inquiry

significance. I remind her that she is not helpless but can play an active role in removing the curse and improving her life.

9. Again, I'm demonstrating open-mindedness about her situation, trying not to overreach or to suggest that I know all about her or her situation. By admitting I'm fallible and limited by the information she gave me, it allows her to forgive any minor errors or mistakes that don't apply to her. It's similar to when a psychic reminds her audience that she's only human and not 100 percent perfect.

10. I'm establishing my experience on the subjects of curses. My message to her is: I understand your situation, I have experience in helping resolve it with other people, and I'm going to tell you how to address this.

11. It was clear that psychics were only exacerbating her problem; note that, as with curses, I avoided telling her that psychic power doesn't exist, because if she is a strong believer in psychics then any statements I made to that effect would put me (and therefore the perceived credibility of my advice) in conflict with her beliefs. Instead, I took a different path and gave her a simple, practical reason not to continue seeing psychics: they all failed to help so far, which she could not deny.

12. I wanted to empower her to help herself and encourage her to see herself as the catalyst for change—not me, not psychics, and certainly not whoever she believed had cursed her.

13. I tried to frame the curse, or at least the harm that a curse can do, within the context of her belief system and a "psychological perspective" without flat-out denying the existence of a curse or malicious magic. If her email had suggested that she had some doubt that she really was the victim of a curse, I would have been more skeptical about questioning that premise. Ridiculing or dismissing the idea that a curse may exist would have diminished my credibility in her eyes, and therefore sown doubt that I understood the situation and could resolve it through her.

14. Here and elsewhere I personalized my advice as much as I could so that she would recognize how my directions and counsel applied to her and her specific relationship situation.

15. I almost rewrote this sentence, not wanting to invoke or give authority to the widely popular (and widely discredited) "law of attraction" as promoted in *The Secret* and elsewhere. However, I decided that the statement was quite true from a psychological point of view, and in any event, if Chelsea did happen to be an adherent to the law of attraction ideology, I could use that to my advantage by pitting one blinkered worldview against a less toxic one.

16. This is the last time in my response to Chelsea that I refer to a curse; by the end of the letter I want her focusing on the ways in which she can fix the problem through logic and psychology, not through consulting psychics or thinking of ways to remove a magical curse.

17. I'm trying to give her some simple but sensible insight into the psychology of her beliefs and confirmation bias.

18. Here I tried to guard against the expectation that my advice will magically fix the situation immediately, and I caution that it will be a gradual process.

19. I close by reminding her that I am concerned about her, trying to help her, and offering sympathy and compassion.

Conclusion

I'm sure other skeptics may have handled the situation differently or better than I did. I'm not suggesting that this was the only, or the best, way to handle this situation, but I did the best I could under the circumstances.

I did indeed get a reply back from Chelsea: "Hi Mr. Radford, Thank you so much for that advice, maybe that is what I needed and you are absolutely right! I will definitely work on that and get back to you with an update. Best advice I've gotten yet. I feel better already! Thanks again. Best regards, Chelsea." ■

No Reason to Believe That Sykes's Yeti-Bear Cryptid Exists

RONALD H. PINE and ELIÉCER E. GUTIÉRREZ

In the November/December 2014 Skeptical Inquirer, Sharon Hill (in her article "Bigfoot DNA Data Disappoints and Reveals Surprise") reported on the results of a study by Bryan Sykes, of the firm Oxford Ancestors Ltd., and four others, which was published in 2014 in the *Proceedings of the Royal Society B* (Sykes et al. 2014). The study consisted of DNA analysis of thirty hair samples that the authors had been told were thought to be from "anomalous primates," that is, from Bigfoot, Yeti, and the like. The authors concluded that all but two of these samples came from known domestic and wild animals and from one human.

The two exceptions were represented to the authors as being from the Himalayas and from Yetis. Sykes and company claimed that these samples were genetically identical, at least in the very short mitochondrial DNA sequence they analyzed, with the sequence from a 40,000-year-old Polar Bear. This convinced them that the Himalayan samples must have come from a type of bear unknown to science, although they admitted that the genetic makeup of Himalayan bears of known species was undocumented. One of these samples was said to have come from an animal shot by a hunter very familiar with the Brown Bear. This hunter had supposedly claimed that the behavior of this animal was very different from that of ordinary Brown Bears. If this hunter was so familiar with Brown Bears, though, it seems odd that he would not realize that the animal he'd shot was a bear of some sort and not a Yeti. Sykes et al. do not explain this hunter's confusion in this regard. They suggested that this supposed unknown type of bear might have been, at least in part, responsible for the Yeti legends, "especially if, as reported by the hunter […], they behave more aggressively towards humans than known indigenous bear species." In various statements to the media, Sykes emphasized that he intended to mount an expedition to the Himalayas in search of the newly minted cryptid and to write a book about his investigations in cryptozoology.

When we became aware of Sykes et al.'s conclusions, we were immediately skeptical because—for all they or anyone else knew—the ordinary Brown Bears of the Himalayas might, on occasion, or regularly, have the same very short DNA sequence as at least some Polar Bears, past and/or present. The two are, after all, each other's closest relatives. We also thought it strange that Sykes et al. had not acquired samples of museum specimens of Himalayan Brown Bears and sequenced their DNA—a task that could be easily accomplished—to see if any of them might match those that they attributed to an "anomalous" bear. We also wondered why going to the trouble of mounting an expedition to the Himalayas was contemplated when such museum specimens are readily available for analysis. In addition, the scope of their analysis seemed insufficient.

Then Ceiridwen Edwards and Ross Barnett (2014) published a paper in which they stated that the supposed cryptid samples were old samples that might have undergone degradation, thus causing them to be misidentified. They also pointed out that these samples matched a specimen of a present-day Polar Bear, not a fossilized one, as Sykes et al. had claimed. Then Sykes and two of his colleagues (Melton et al. 2014) vouched for the non-degradation of their samples and reaffirmed the supposed need to get a sample or samples from the Himalayas, seemingly trusting their two old, supposedly cryptid samples but still not trusting museum-derived samples, some of which might be younger. It may be that Sykes's partiality for mounting an expedition is related to perceived newsworthiness and associated book and TV series opportunities.

Sykes has been quoted as saying that we had just used "statistics" in our analysis, as if statistics were not an acceptable pathway to scientific conclusions.

The analyses that we then conducted and published showed that the relevant DNA sequence of Brown Bears is sufficiently variable that it overlaps with that of Polar Bears and so they cannot be told apart on that basis (Gutiérrez and Pine 2015). Thus there is no reason to believe that Sykes et al.'s two samples came from anything but ordinary Brown Bears.

The press for the most part misinterpreted our research, often stating that we had shown that Yetis were just bears, among other errors. Sykes has been quoted as saying that we had just used "statistics" in our analysis, as if statistics were not an acceptable pathway to scientific conclusions, and, further, that he has disdain for genetics research that heavily involves mathematics (the modern field of bioinformatics). He has also suggested that we, as "desk-bound molecular taxonomists" should be "getting off [our] butt" and doing fieldwork. Those familiar with our careers, of course, know of our extensive field experience, which has even taken one of us (Pine) to the Himalayas, where Sykes's Yeti-bear cryptid is supposed to live.

The second author of the Sykes et al. paper was Rhettman A. Mullis Jr., president and chairman of the board of the Bigfootology organization. This organization's "creed" affirms the existence of Bigfoot. It also, less formally, affirms the existence of Yetis, which it says are related animals. Its website lists Sykes as the organization's official United Kingdom Representative and Team Geneticist, and the "top geneticist in the world." Mullis states he was with Sykes when "[…] an experience […] caused [Sykes] to lose his objectivity for a while and [he] went from skeptic to believer [in Bigfoot]." Mullis says that he promised not to discuss the nature of this experience, so that Sykes could reveal it in his then forthcoming book (*The Nature of the Beast: The First Scientific Evidence on the Survival of Apemen into Modern Times*). Sykes also claims to have a mysterious hair sample from Bhutan, which he cannot identify at all, although it seems to us that it should be easily identifiable through DNA analysis at least to biological family. But perhaps he has now managed to identify it in time for this to have enlivened his book. According to Mullis, another TV series is also in the works, featuring DNA analyses of presumptive Bigfoot tissues. As team geneticist, Sykes will presumably be involved in this series. All things considered, Sykes, named "Cryptozoologist of the Year 2013" according to the blog CryptoZooNews, seems to be gaining more and more prominence and respect among cryptozoologists. However, certain of his pronouncements seem highly dubious to his fellow scientists; he has reached some embarrassingly incorrect conclusions, and a number of his statements as to his credentials are thought to be misleading. As a result of this, he has lately come under criticism in the press, various blogs, and social networks. His hypothesis that Zana, a woman who had entered cryptozoological lore as a potential "ape-person" of some sort, was a survivor of a hitherto unknown early hominid migration out of Africa is an example of a dubious hypothesis; his genetic sequencing of the Mesolithic "Cheddar Man" has been questioned; and his now-refuted identification of a Floridian as a descendant of Genghis Khan is an example of a demonstrably false conclusion, while his representing of himself as a current professor at Oxford and a member of a (nonexistent) research institute is regarded as misleading.

The latest development is that, as of this writing, Sykes's book has just now been published, although it is not yet available, either in print or electronically, outside of the United Kingdom. In the publisher's current online teaser (www.amazon.co.uk/dp/1444791257/ref=rdr_ext_tmb) about this work, one can see that one of the chapters is titled "The Snow Bear," presumably Sykes's

name for the Himalayan cryptid that he and his coauthors created. In an excerpt, including the entire first chapter, we learn of the experience that, according to Mullis, turned Sykes into a "believer" of sorts in Bigfoot. The late Donald Wallace, according to Sykes, engaged in work on a family of Bigfoot in the Cascade Mountains and got to know one named the "Big Guy." This individual supposedly resides in a cavity under a very large fir tree and is so depicted in a drawing at the beginning of the chapter. Sykes and Mullis were led to the site by Wallace's daughter, Lori Simmons. Sykes could discover no entry to the supposed cavity but, when Simmons stamped on the ground, eventually six knocks were heard, perceived by Sykes to have come from under the tree and said by Simmons to be the preferred method of communication by this Bigfoot, which she states has amorous intentions toward her. (Claims of knocking communication are common in Bigfoot lore and reports. Knocking was also often involved in séances during the heyday of Spiritualism, probably for the same reasons.) Sykes says that he found the whole experience to be profoundly disturbing and a true mystery.

In the lead-in to Chapter 2, Sykes repeats a portion of the account by Slavomir Rawicz of his supposedly watching Yetis for two hours during Rawicz's supposed four-thousand-mile trek across Asia after escape from a Soviet prison camp, and as described in his ghostwritten book *The Long Walk*. Sykes treats this journey as history, at least up to where his text in the teaser leaves off, although the consensus is that Rawicz's story is a hoax. A later chapter is titled "Zana." ■

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Eliécer E. Gutiérrez holds the Peter Buck Postdoctoral Fellowship of the National Museum of Natural History, Smithsonian Institution. He has conducted extensive fieldwork in Venezuela, his home country; named various new species and subgenera of mammals; assessed evolutionary relationships between different categories of mammals; and developed a new explanation of how interactions between kinds can lead to isolation and new species.

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Homeopathy 'Unsupported, Ineffective, Dangerous': CFI Testimony to FDA

Here is the full text of invited testimony by the Center for Inquiry at the April 20, 2015, hearing of the U.S. Food and Drug Administration on "Homeopathic Product Regulation: Evaluating the FDA's Regulatory Framework After a Quarter-Century." The testimony was delivered by Michael De Dora, director of CFI's Office of Public Policy in Washington, D.C. (See also News and Comment, p. 6.)

Testifier: MICHAEL DE DORA

I speak today as director of public policy for the Center for Inquiry (CFI), an educational and advocacy organization that promotes reason and scientific integrity in public affairs. My testimony, however, is not only on behalf of our organization, its employees, and its members, but also on behalf of dozens of doctors and scientists associated with CFI and its affiliate program, the Committee for Skeptical Inquiry, with whom we work on these matters. Neither I nor the Center for Inquiry has any financial interests relevant to this meeting.

We applaud the Food and Drug Administration (FDA) for holding this important hearing. Given the tremendous growth in the sale of homeopathic products in recent decades, a reassessment of the FDA's regulation of these products is clearly warranted. Our goal is to briefly review the scientific evidence that shows homeopathy is an ineffective method to treat illnesses; illustrate the harm caused by reliance on homeopathy instead of actual medicine; and propose actions the FDA should take to hold homeopathic products to the same standards as non-homeopathic drugs in order to fulfill its mandate to protect the American public.

I. The Empirical Evidence

We could spend hours discussing the extensive, decades-long scientific examination of homeopathy, but suffice to say the empirical evidence against homeopathy is overwhelming: aside from a placebo effect, homeopathic products have no effect in treating illnesses.

Consider the most recent findings, released last month by the Australian National Health and Medical Research Council (NHMRC). This group conducted a meta-study thoroughly assessing more than 1,800 papers on homeopathy, 225 of which met the criteria for inclusion. It concluded that:

> "There are no health conditions for which there is reliable evidence that homeopathy is effective."[1]

Proponents of homeopathy will suggest that there are studies which show homeopathy is effective. It is true you can find studies that suggest homeopathy has brought about a positive result. Yet these studies have found only a *placebo* effect, and significantly do not and cannot explain *if* and *how* homeopathy has treated the illness. Further, these studies must be seen within the broader context of hundreds of studies that have found homeopathy ineffective.

Of course, this all makes sense: by its own definition, homeopathy *cannot* work. Its centuries-old pseudoscientific principles sit at complete odds with our modern understanding of biology, chemistry, and physics—the bodies of accepted scientific knowledge that form the basis of modern medicine.

Again, we need not spend much time on this, as the federal government is well aware of the scientific evidence against homeopathy. As the National Center for Complementary and Integrative Medicine states on its website:

> "There is little evidence to support homeopathy as an effective treatment for any specific condition."[2]

Further, *the FDA itself* has recognized that homeopathy is not effective through its various consumer warnings about the health risks of relying on homeopathic products to treat medical conditions. This includes the FDA's March 19, 2015, warning against using homeopathic products that claim to treat asthma, an often life-threatening condition.[3]

II. The Harm Caused by Homeopathy

Despite substantial empirical evidence to the contrary, companies persist in marketing ineffective homeopathic products as drugs that can effectively treat illnesses, and consumers continue to spend upwards of billions of dollars each year believing that they will be helped—and worse, that even if these products might not be effective, they are at least not harmful. This should deeply concern the agency charged with protecting public health, especially as the problem is in part caused by said agency's failure to regulate homeopathic products.

Despite what many consumers believe, homeopathic products *can* directly cause harm. Sadly, children often bear the brunt of this harm. For instance, in its 2012 report, the American Association of Poison Control Center noted that there were a whopping 10,311 reported cases of poison exposure related to "homeopathic agents," with 8,788 of those reported cases attributed to children *five years of age or younger*. Of the 10,311 reported cases, 697 required treatment in a health care facility.[4]

Still, perhaps the greatest harm caused by homeopathy is not necessarily caused by the products themselves—which, when properly prepared, rarely

contain anything other than water and inactive ingredients such as sugars and binding agents—but by the fact that people often rely on homeopathic products to the exclusion of proven scientific remedies. As the Australian NHMRC study states:

> "People who choose homeopathy may put their health at risk if they reject or delay treatments for which there is good evidence for safety and effectiveness."[1]

The website What's the Harm details many such cases.[5] I will highlight just a few.

> **Lucille Craven** of New Hampshire was diagnosed in 1997 with a small, pea-sized carcinomatous breast tumor. Although her doctor recommended mastectomy and lymphectomy, Lucille treated her cancer with homeopathy. She died less than thirty-six months later.[6]
>
> **Diane Picha** of Wisconsin was diagnosed in late 1998 with lung cancer. After successful surgery to remove her tumor, her cancer grew back. Picha visited a homeopathic clinic, where she was advised to halt further medical treatments. She died in April 2000.[7]
>
> **Katie Ross** of Nevada was diagnosed with ulcerative colitis; doctors recommended she have her colon removed. Her mother instead pursued homeopathic treatments. Katie dwindled from ninety to fifty pounds and nearly died when her colon perforated, but survived when her mother finally approved surgery at the doctor's pleading.[8]
>
> **Isabella Denley** of Melbourne, Australia, was an epileptic toddler prescribed anti-convulsant medication by her neurologist. Her parents, however, treated her with exclusively homeopathic products. She died at just thirteen months old.[9]

These examples clearly illustrate the public's lack of knowledge regarding homeopathy, the danger of homeopathic products, and thus the need for the FDA to take an active approach in promoting accurate knowledge on homeopathy.

III. Proposed Regulations

Proponents of homeopathy often argue that homeopathic products should be available because individuals have the right to freedom of choice. We fully support the right to freedom of choice. However, we also believe that *true* freedom of choice is impossible unless one is *fully informed* on the choices. In fact, this is one of the fundamental principles justifying FDA regulation: the public needs the guidance of an expert agency when it comes to buying drugs.

Accordingly, we propose the FDA announce and implement strict guidelines that require all homeopathic products meet the same standards as non-homeopathic drugs. In particular, we suggest the FDA take three steps:

> **Testing for homeopathic products.** As the FDA recognizes, the federal Food, Drug and Cosmetic Act *does not* exempt homeopathic products from meeting the same standards of safety and efficacy as non-homeopathic drugs. Nor does this Act prevent the FDA from enforcing these standards. In order to protect public health, we urge the FDA to mandate that all homeopathic products on the market pass safety and efficacy tests equivalent to those required of non-homeopathic drugs on the market.
>
> **Labeling for homeopathic products.** Labeling on homeopathic products needs to improve; this is especially true if the FDA does not require they be tested for safety and efficacy, as this would allow dangerous homeopathic products to remain on the market without warning, marketed to a public that is unaware homeopathic products are different in kind from non-homeopathic drugs. Currently many homeopathic products boast that they are regulated by the FDA without explaining they are not subject to testing. This is seriously misleading. We therefore urge the FDA to ensure that all homeopathic products prominently state two things:
>
> 1) The product's claimed active ingredients in plain English, and;
> 2) That the product has not been evaluated by the FDA for either safety or effectiveness.
>
> **Regular consumer warnings.** We have been encouraged by the FDA's recent announcements warning consumers that homeopathic products will not treat their illnesses. Given the lack of public knowledge on homeopathy, we urge the FDA to make such announcements on a regular basis, especially, but not only, during times of illness outbreaks and public health crises.

In summary, homeopathy is unsupported by scientific evidence, ineffective in treating illness, and, when relied upon instead of actual medicine, dangerous and even deadly. To ensure the protection of the American public, the FDA should rely on its well-established regulatory system to require homeopathic products to meet the same standards as non-homeopathic drugs, or *at the least* mandate labeling for homeopathic products which states: the product's claimed active ingredients in plain English; and that the product has not been evaluated by the FDA for safety or effectiveness. The American public deserves as much from the agency tasked with protecting them.

Thank you.

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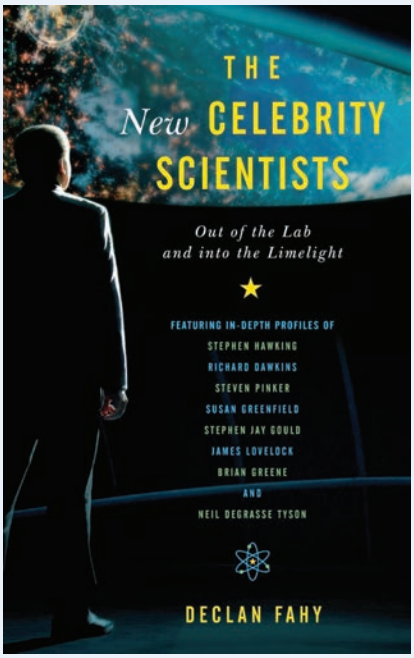
This is an edited excerpt from *The New Celebrity Scientists: Out of the Lab and into the Limelight* by Declan Fahy, published by Rowman & Littlefield, 2015, and published here by permission of the publisher and author.

A BRIEF HISTORY OF SCIENTIFIC CELEBRITY

Science is personified by a handful of articulate, media-savvy scientists who stimulate new thinking, drive scientific controversies, enhance public understanding, mobilize social movements, and shape policy. To millions, these scientific celebrities are the public face of science.

DECLAN FAHY



Charles Darwin was a master of public relations. While The Origin of Species swept through nineteenth-century culture, shattering the prevailing religious orthodoxy about the dawn of human life, Darwin cultivated his popular image. He distributed mass-produced photographs, signed autographs, collected songs and poems about himself, responded to his voluminous mail with pre-printed cards, refused most interviews, and avoided speaking before crowds where questions might catch him off-guard. He met author George Eliot and received an inscribed copy of Das Kapital from Karl Marx.

The theory of evolution by natural selection he outlined in his 1859 book coursed through Victorian society, spreading far beyond learned journals and professional societies. The general public could buy a low-cost edition of *The Origin of Species*. Magazines spread his image and ideas through popular culture, sometimes in strange ways. Caricaturists and cartoonists, for example, drew Darwin's head—with its distinctive long beard and large dome of his skull—on the body of an ape. Darwin became public property. "Deep down," wrote historian of science Janet Browne, "Darwin's sons and daughters were forced to accept that he was not just their father. He belonged to everybody." In his time, he was a scientific celebrity.

The great naturalist showed that fame, lasting fame, is never just the inevitable consequence of great achievement, even one as seismic as *The Origin of Species*. The world must hear about the achievement.

Nowhere is this more clear than in the case of the twentieth century's most iconic scientist—physicist Albert Einstein. He personified science in mass culture, and he became a global symbol for the mind's phenomenal power. He exploded into popular consciousness in 1919 after his general theory of relativity, which was nothing less than a new way of viewing the physics of the uni-

verse, was confirmed by two independent experiments during a solar eclipse. Afterward, Einstein received significant journalistic attention—"Revolution in Science. New Theory of the Universe," reported *The Times*—but he vaulted to global celebrity two years later when he visited the United States to raise money and public awareness for Zionist causes.

The two-month visit in 1921 sparked a frenzy of public and media interest. *The New York Times* described a "man in a faded grey rain coat and a flopping black felt hat that nearly concealed the grey hair that straggled over his ears . . . But underneath his shaggy locks was a scientific mind whose deductions have staggered the ablest intellects of Europe." The *New York Evening Post* described Einstein's Berlin home, and detailed his love of Dostoyevsky, his working methods—lost in intense concentration in his room alone for three or four days—and his fondness for cigars. The American press, wrote scholar Marshall Missner, was "*the* instrument that made Einstein into a celebrity."

On the back of his coverage, as relativity matched the mood of uncertainty that followed the savagery of World War I, Einstein became a global star. The London Palladium asked him to put on his own show. Girls in Geneva mobbed him. One tried to cut off a lock of his hair. Telescopes and towers were named in his honor, as were children and cigars. When he and his wife, Elsa, attended the 1931 premiere of *City Lights*, photographers snapped their picture on the red carpet alongside the film's star, Charlie Chaplin. Abraham Pais, one of Einstein's former colleagues and a historian of science, later wrote: "Einstein, creator of some of the best science of all time, is himself a creation of the media in so far as he is and remains a public figure."

Since Einstein penetrated deep into popular culture in the early twentieth century, the mass media expanded dramatically. At the end of the century, the media were a center of public life and had enormous power. For most adults, the media were the source of most ideas and information about science and issues affected by science. In their myriad forms, the media disseminated information, shaped public opinion, conveyed ideas about how the world works, how the world can be experienced, how society is organized, and what issues matter for citizens and how these topics come to be viewed and understood in broad culture.

The media also focused overwhelmingly on individuals, leading to our pervasive celebrity culture where fame has become *the* most powerful way of understanding ideas in a complex world. Within this culture, a new type of scientist came out of the lab and into the limelight—the celebrity scientist.

These scientific stars gripped the public imagination, using their vast influence to stimulate new thinking, drive scientific controversies, enhance public understanding, mobilize social movements, and shape policy. In celebrity culture, they spoke for science in public. But more than that, their fame gave them power *within* science. Their stardom affected the inner workings of science, shaping the discovery of new knowledge about our natural world. Because of their profound ability to influence public life and professional research, the celebrity scientists constitute a new scientific elite.

FRED HOYLE AND CARL SAGAN: MASS MEDIA STARS

In 1950, British astronomer Fred Hoyle became an emblematic figure in this new media age of science. That year, he delivered a series of BBC radio lectures on "The Nature of the Universe" that were so successful that listeners voted him Britain's most popular broadcaster. In his soft Yorkshire accent, he clearly explained cosmology and evoked familiar domestic scenes to make complex science part of listeners' everyday worlds. Even professional physicists stopped work and tuned in. The lectures were subsequently printed as *The Nature of the Universe*, which sold 77,000 copies in just six months, making it an early scientific best seller.

Hoyle's rise to stardom occured right at the beginning of a period historian of science Jon Agar called "the long sixties." This era spanned roughly 1955 to 1975, and it featured a dramatic clash of ideas that transformed politics, divided society, and overhauled scientific life so radically that scholars called it a second scientific revolution, after the first in the sixteenth and seventeenth centuries that gave birth to the modern scientific enterprise.

Beginning in 1970, the amount of science reported in the media exploded. In the United States, the 1970s and

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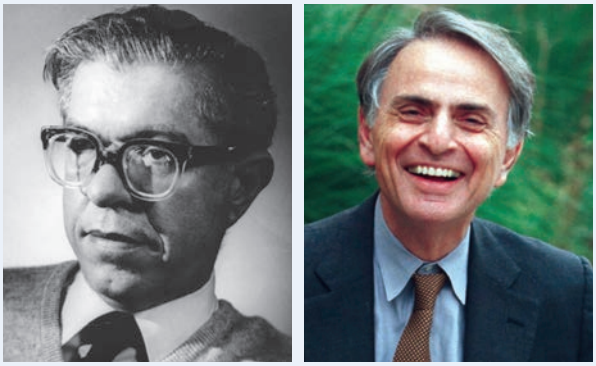


Fred Hoyle and Carl Sagan

Jacob Bronowski, *The Ascent of Man*

1980s saw the creation of science sections in dozens of newspapers across the country, the launch of multiple glossy popular science magazines, and the inauguration of a new weekly television series—*Nova*—devoted to science. Popular science books reached a significant point in the mid-1970s. Before then, there were rarely more than ten science titles on the *New York Times* best seller list each year. But afterward, there were rarely fewer than ten science titles each year. The situation in Britain was similar. Science flowed through popular culture.

Television allowed scientists to speak to vast numbers of citizens. The BBC series *The Ascent of Man* told a science-based story of human history. Broadcast in Britain and the United States in the early 1970s, it was hosted by mathematician and intellectual Jacob Bronowski, who had written and spoken about science to wide audiences in magazines and on television long before the show granted him international prominence. During the same decade, across the Atlantic, a planetary scientist was proving himself an engaging media presence, a scientist who would became his era's best-known public scientist: Carl Sagan.

Sagan symbolized an era when the television age met the space age. He was a planetary scientist at a time when space became a proxy battleground for rival Cold War superpowers. He was telegenic at a point where it was clear that television favored personalities, like him, who were articulate, attractive, eloquent, and enthusiastic. He was already well known at the end of the 1970s as a Pulitzer Prize–winning popular science writer who regularly explained astronomy to the hundreds of thousands of nightly viewers of *The Tonight Show* with Johnny Carson.

But when he unveiled the universe to half a billion viewers in the 1980 television series *Cosmos*, he was propelled to unprecedented global fame. Viewers in sixty nations followed the planetary scientist on his thirteen-part personal odyssey through eons of cosmological and human history. His spin-off book of the series, *Cosmos*, spent more than seventy weeks on *The New York Times* best seller list and earned him more than a million dollars in royalties. *Time* in 1980 featured Sagan on its cover and called him a "Showman of Science," "the prince of popularizers," "the nation's scientific mentor to the masses," and "America's most effective salesman of science."

Carl Sagan often appeared on *The Tonight Show* with Johnny Carson.

A biographer of Sagan noted that the producer of *Cosmos*, Adrian Malone, vowed to "make Carl a star." And indeed the show led to a surge in media and public attention to Sagan. Journalists reported on his personal life, writing about his trademark turtlenecks and his distinctive orange Porsche 914 with its license plate, PHOBOS, one of the moons of Mars. He had to cope with the women who appeared at studios demanding to see him, convinced he spoke directly to them through their television screens. He sometimes sat facing the wall in restaurants to avoid the stream of autograph hunters and well-wishers.

His celebrity brought lucrative rewards. As his biographers noted, the $2 million he received for *Contact*, his 1985 novel about the scientific search for extraterrestrial life, was, at the time, the largest advance ever given by a publisher for a work not yet in manuscript form. It also brought him influence, granting him a public platform for his anti-nuclear advocacy, as he warned political leaders about the devastation that would occur in the radiation-soaked darkness of a global nuclear winter. Students who watched *Cosmos* wanted to become scientists. No modern scientist had yet achieved such reach, renown, and reputation.

But his fame damaged Sagan's standing in the scientific world. Harvard denied his bid for tenure, a lifetime appointment that a university awards to accomplished scholars. The nation's most prestigious scientific society, the National Academy of Sciences, rejected the possibility of his becoming a member. A number of influential peers dismissed him as a mere popularizer and not a real scientist, someone who spent too much time on *The To-*

night Show and too little time engaged in the painstaking grind of observing the planets.

He came to starkly illustrate a feature of modern scientific fame, a feature that Michael Shermer later called the "Sagan Effect": the perception among researchers that the level of a scientist's public fame is in direct opposition to the quality of their research work. Popular scientists, in effect, were not seen as strong scientists. Before his media career, however, Sagan established a sound reputation as a researcher, known for his path-breaking work that showed Venus was boiling hot and violent windstorms raged across the surface of Mars. He accumulated 500 total career publications—an astonishing rate of productivity that averaged one published academic paper each month. The Sagan Effect, for Sagan, was false.

Not that Sagan was the only scientist to spot the media's enhanced power. He was one of several scientists in U.S. public life in the sixties and seventies who saw the media as a way to influence public and political attitudes toward science. Rae Goodell wrote about these figures—such as anthropologist Margaret Mead, biologist Paul Ehrlich, and chemist Linus Pauling—in her 1977 book *The Visible Scientists*. She described how they broke with conventional ways to shape science policy. They bypassed the traditional ways that experts gave behind-the-scenes advice to policymakers. They went directly to the public instead, using the mass media to put science on the public agenda and therefore shape citizen attitudes and, as a result, affect science policy. They showed that the individual scientist working in a cutting-edge area of science, once they were sufficiently articulate, controversial, and distinctive, could attract and hold the media spotlight.

These visible scientists ruptured the conventional ways researchers earned scientific and public attention. As described by a founding father of the sociology of science, Robert K. Merton, an individual scientist's reputation was traditionally established exclusively *within* science. A scientist gained recognition only after their published research was validated by their peers. The more and better their research, the more their reputation grew and the greater their status in science became. The ultimat e accolade was the Nobel Prize, the public symbol of scientific excellence, a public award bestowed on those researchers deemed to have produced the world's best science. But Sagan and other visible scientists had a reputation that was in part created *outside* science. As well as scientific credentials, what also mattered was how he or she communicated, how engaging they were, how their science tied to public issues, and how interesting they were as personalities.

A NEW CELEBRITY CULTURE

As media personalities, the visible scientists were early actors in what has become a pervasive celebrity culture. Today the media concentrate on personalities, representing complex events and issues through the prism of personalities. As cultural historian Leo Braudy noted in his history of fame, *The Frenzy of Renown*, in our celebrity culture "human faces are plastered on every idea and event" and "complex phenomena wear the reduced features of emblematic individuals." Critics and commentators have lamented this shift in culture, viewing the media's obsession with celebrity as the triumph of the trivial, the elevation of the inane, the proof of a debased and dumbed-down culture.

But there is a more positive view of fame, one that sees great power and importance that celebrities hold in our media-saturated public life. For Braudy, fame "sits at the crossroads of the familiar and the unprecedented, where personal psychology, social context, and historical tradition meet." Celebrities have power because they vividly represent ideas, issues, and ideologies, allowing people to visualize and make sense of abstract concepts. As the author David Foster Wallace wrote about sports stars, "Great athletes are profundity in motion. They enable abstractions like *power* and *grace* and *control* to become not only incarnate but televisable."

Scholars of communication and popular culture, moreover, have defined celebrity in a technical sense. Celebrity is a phenomenon formed as a result of three interconnected processes. The first process can be seen when someone is portrayed in media coverage as a distinctive individual whose public and private lives merge. (When Sagan died, *The Australian* said he had the good luck to have "a compelling presence" and "good looks.")

As media personalities, the visible scientists were early actors in what has become a pervasive celebrity culture. Today the media concentrate on personalities, representing complex events and issues through the prism of personalities.

The second is when a person becomes a cultural commodity, used to sell his or her own work, but also potentially as a way to advertise other cultural products. (*The New York Times* said *Cosmos* focused so intensely on its charismatic host that the show could have been subtitled: "The Selling of Carl Sagan.")

The third—and most complex but arguably central—process concerns the way the person comes to represent and embody ideas, ideologies, and processes. Sagan embodied for many the idea of the scientist, the heroic seeker after truth who sought to overthrow ignorance and superstition with rationality, showing how science was, in his words, a candle in a demon-haunted world. (When he died, *The Atlanta Journal and Constitution* said: "For the common man, his was the face of science.")

THE NEW CELEBRITY SCIENTISTS

By the time Sagan passed away in 1996, scientists were described in the media using the language of celebrity. In 1997, *Vogue* magazine said serious science had become glamorous, and *Current Biology* said scientists were portrayed as "stylish and even sexy." *The Independent* later argued that the turn of the twenty-first century saw science dominated by its "media superstars." In this cultural atmosphere, where celebrity became cultural currency, a small handful of North American and British scientists came to dominate public discussion of science, publishing best-selling titles, receiving six-figure advances for books about esoteric topics like quantum physics, producing science documentaries, contributing to late night talk shows, appearing in glossy magazines, being photographed by celebrity photographers, and lobbying parliaments. Among the star scientists who emerged in this period were:

STEPHEN HAWKING
The cosmologist became the world's best-known contemporary scientific celebrity after the success of *A Brief History of Time*, first published in 1988, brought cosmology to millions of readers worldwide. But his subsequent public career has been marked by a succession of private revelations, recycled versions of his best-selling popular book, and often-caustic public evaluations of his scientific reputation.

RICHARD DAWKINS
Called "Mr. Public Science himself," "Professor Evolution," and "Professor Science," the evolutionist and writer fashioned his fame over his decades-long public career as strident advocate of evolution, combative defender of science, and relentless critic of religion.

NEIL DEGRASSE TYSON
The director of the Hayden Planetarium in New York became the contemporary heir to Carl Sagan and is the United States's unofficial chief public spokesman for science and space science, shaping public attitudes, science policy, and the future of his field.

STEPHEN JAY GOULD
The late paleontologist, who one critic described as a "learned Harvard professor and baseball-loving everyman," enthused millions about evolution, battled creationism, and tried to reconcile science and religion.

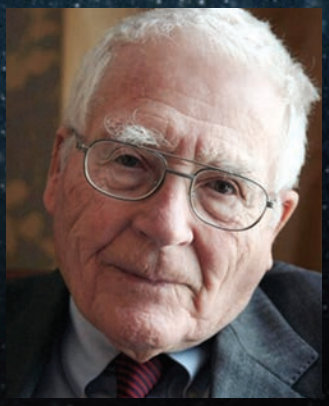
These selected scientists exploited and managed their fame in different ways. Dawkins used his fame to move far from the laboratory and become the head of a new social movement of atheists. Pinker and Gould managed the difficult task of being famous public intellectuals and prolific university-based researchers. Greenfield embraced fame and its advantages for raising the public profile and reputations of scientists. Lovelock reluctantly embraced stardom after he was shut out of mainstream science. Greene uses his fame as a passport to move seamlessly between the worlds of science and entertainment, while Tyson shows the power of a public scientist, one who has not got a strong record of scientific research, to influence public understanding, scientific debate, and public policy.

Together they are emblems of a new era of science, one embedded in the dynamics of the media, the demands of celebrity culture, and the vicissitudes of public life. They vividly embody the new era of the celebrity scientist. ■

STEVEN PINKER
Once described as "famously rock'n'roll with his long, curly hair and his cowboy boots," the Harvard cognitive scientist explained the biological roots of language and argued controversially that biology plays a major role in molding not just human behavior but human society and culture.

BRIAN GREENE
The physicist is the public face of string theory, the novel branch of physics that captured the turn-of-the-century scientific and public imaginations, and the scientist who can move seamlessly between speaking at academic conferences and starring in *The Big Bang Theory*, without losing his scientific status.

SUSAN GREENFIELD
The former Oxford professor of pharmacology and member of the U.K. House of Lords demonstrates the contentious portrayal of female scientists—she has been called a "mini-skirted media celebrity"—and the ability of famous scientists to raise and discuss uncertain science-based social problems, such as the claimed harmful effects that screen technologies have on children.



JAMES LOVELOCK
Called the "intellectual guru of the environmental movement," the independent scientist worked for decades in two isolated English farmhouses, and showed with his controversial Gaia theory of the living earth that a popular science book can not only influence science but can also spark an entire belief system and come to powerfully symbolize the current climate crisis.

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Covert Cognition: My So-Called Near-Death Experience

A skeptic sees no light at the end of the tunnel when she falls into a six-week coma and nearly dies.

STEPHANIE SAVAGE

We often see and hear dramatic accounts of near-death experiences (NDEs) in books, in films, and on television. But where are the stories from skeptics who "returned" but not from The Other Side? After all, NDEs are generally accepted as a neurological phenomenon. Well, most people who have NDEs actually die. Among the survivors, many are severely brain-damaged. Of those who do recover, most are believers. As for the skeptical ones, how many of them are writers? Not many, probably, but I am one.

"It's the profound brain damage again," has become a running joke whenever I say something stupid, a fairly common occurrence long before the strokes that caused my coma. This wouldn't be very funny if I weren't fully conscious now—excluding mornings. I'm writing this article not long after the first anniversary of my awakening. My boyfriend calls it Coma Day, and he's never forgotten the date. I've never forgotten that first conscious moment.

I thought I was suffering through a miserably sleepless night, a recurring theme in what I call my coma-dream. Every time I finally managed to drop off, something would wake me up again. Whenever doctors shined lights in my eyes looking for signs of consciousness, I would grumpily ask them to leave me alone so I could get back to sleep . . . in the coma-dream. My lack of response in the real world only added to their conviction that my brain was, as they said, profoundly damaged. My mother, boyfriend, and his mother, who had visited daily, noticed signs of my increasing awareness, but their observations were disregarded by the doctors.

When I finally awoke, I thought, "Goddammit, I just fell back asleep." That's when my mother told me I had actually been sleeping for six weeks, on the brink of death. I was shocked. "Seriously?" I mouthed. I had a tracheostomy, so I couldn't speak—a fate worse than death for me.

However, the doctors' conclusions weren't groundless. My MRI showed that I had suffered a series of strokes on both sides of my brain when my blood pressure plummeted from septic shock. The sepsis was triggered by Legionnaires' disease, a rare form of severe pneumonia discovered when it sickened attendees at a Legionnaires' convention.

In the waning days of a vacation in Sicily with my boyfriend, Keith, I came down with what we thought was nothing more than a nasty chest cold. We joked about my case of "Mussolini's Revenge," but it was far more serious than that. A few days after we returned home, he rushed me to the emergency room. I was so delirious that when he asked why I hadn't turned on the air conditioning, I said, "I like the heat." It was 105° that day, and I hate the heat.

Most of the victims at the Legionnaires' convention were elderly. I caught the disease because my immune system was weakened by prednisone, which I was taking for an obscure autoimmune disease called dermatomyositis. It's uncommon enough that I've often seen the dermatomyositis Wikipedia page on the computer screen when seeing a new specialist. And, yes, it is disturbing that medical professionals are using a questionable information source popular with schoolchildren.

Though the doctors continued to dismiss suggestions of my improving wakefulness, much of what was going on around me was filtering into my coma-dream. I wasn't aware that I was in a vegetative state, but I knew I had a "trach," a term I had previously heard only in medical dramas. Encouraged by an imaginary doctor, I blew large bubbles out of my nose—as if I'd been snorting bubblegum—when I had a sinus infection from my feeding tube. The constant thrumming was the machinery keeping me alive.

Near death isn't required for a near-death experience. They can be triggered by severe illness and even fainting (from lack of oxygen to the brain). Though my coma-dream shared many similarities with typical NDEs, my experience was

different because I'm a skeptic. The reason I didn't see dead relatives is I don't believe in life after death. Likewise, I didn't see Jesus's rainbow-hued horse because I'm Jewish and not a four-year-old imagining Jesus with a gay Little Pony. I did, however, dream of ice cream. Indeed, while my life didn't flash before my eyes, childhood elements figured prominently in the revolving segments of the coma-dream. On my Brain TV, some shows were repeats, while others had advancing plots like soap operas. I had a lot of time to kill.

One serial featured a low Big Wheel–like kid's tricycle that churned ice cream in a cart attached to the back as it was peddled. Actually, burning the calories you're about to consume isn't such a bad idea. Sometimes when I peddled this ice cream–making Big Wheel, I was an anthropomorphic polar bear cub. While I saw no religious figures, I imagined miniaturized zoo animals right out of a 1950s sci-fi film. They were having a tea party, like poker-playing dogs except with tiny china cups. You can see why I call this a coma-dream. These surreal images may be akin to the spirits believers see in their NDEs.

After the awakening, I felt like Dorothy waking up in bed after her journey down the Yellow Brick Road. So many of the things in the coma-dream suddenly made sense—except for the cub-powered ice cream Big Wheel and toy-sized elephant. The pachyderm held the teapot with its trunk.

Oh, that's the reason snippets of *The Hitchhiker's Guide to the Galaxy*, one of my favorite books, kept wafting into unrelated storylines. My boyfriend had read to me from the book, while my mother had played the original BBC radio series. I don't believe the incursions always occurred when I heard them, though. My mother also used her e-reader to play some recent David Attenborough nature documentaries, including one on Charles Darwin. (As a former future-paleontologist, evolution has long been a special interest of mine.) Sometimes sections would repeat. I thought I was rewinding the program because my mind wandered (something I do frequently). My Brain TV had a DVR.

Ah, so that's why they kept asking me to stop biting the hose delivering Hi-C to my mouth as if from a beer hat. They weren't risking cavities by giving me a sugary fruit-flavored drink; they were preventing them by cleaning my mouth with a citrus-flavored swab. If I had stopped biting the swab, I wouldn't have had so much plaque on my teeth, the reason I was running my tongue over my teeth in both the coma-dream and in reality. I couldn't understand how my teeth could've gotten that coated overnight. But then, the tooth-licking was one of the signs of recovering awareness that gave my loved ones hope, even if the doctors wouldn't acknowledge it as such.

And my new boyfriend in the dream, the one who looked and sounded exactly like Keith in every way except his beard, actually was Keith, who had grown a full beard while I was in the coma. I wondered why his glasses had been repaired with the same kludge Keith devised in Sicily—with the sticky part of a clear Band-Aid. What a weird coincidence. Since this was a form of dream, that wasn't a tipoff, even when I slipped and called him Keith.

But for most people in a vegetative state, they're more likely to hear prayers and the Bible than *Hitchhiker's Guide*. That must affect what they visualize in their NDEs. Indeed, the content of NDEs varies among cultures. I was raised without religion, but the disembodied voices I heard were not unlike spirit voices. My brain didn't supply images of the afterlife because I believe life after death is a fantasy. Resistance to being awakened is similar to reluctance to return from The Other Side. Using Occam's razor, which is more likely to be true?

If I had been a New Ager, seeing myself being turned over to prevent bedsores would've seemed like an out-of-body experience (OBE). But how many times have I watched myself from outside my body in an ordinary dream? Oh, wait—some people believe those are OBEs too. I once dreamed that a lion put its paw on my hand, only to wake up with my cat's paw on my hand. It doesn't take a genius to figure that one out. There's nothing supernatural about that; it's just sensory information mixed with imagination. Besides, my eyes were sometimes open, so my perceptions weren't always imaginary. That's how I knew Keith had grown a full beard.

Author Stepahanie Savage while in her six-week coma.

After the awakening, I felt like Dorothy waking up in bed after her journey down the Yellow Brick Road. So many of the things in the coma-dream suddenly made sense—except for the cub-powered ice cream Big Wheel and toy-sized elephant.

According to the Merck Manual:

> A vegetative state is absence of responsiveness and awareness due to overwhelming dysfunction of the cerebral hemispheres, with sufficient

> sparing of the diencephalon and brain stem to preserve autonomic and motor reflexes and sleep-wake cycles. Patients may have complex reflexes, including eye movements, yawning, and involuntary movements to noxious stimuli, but show no awareness of self or environment. (Maiese 2014)

Yet, there is growing empirical evidence of covert cognition in people who have been in a persistent vegetative state (PVS) for years. Using functional magnetic resonance imaging (fMRI), which determines brain activity by displaying blood-flow patterns, researchers from Cambridge University, including pioneering researcher Dr. Adrian Owen, were able to communicate with five patients with consciousness disorders by asking them to imagine one of two activities (Owen et al. 2006). In the motor task, they were instructed to imagine playing tennis. In the spatial task, they were asked to navigate familiar locations. The images lit up different brain regions. Four patients were able to answer yes or no questions with this technique (Monti et al. 2010). One answered five of six correctly. His "do not resuscitate" order was rescinded. The results were repeatable and corresponded closely to those of the healthy controls.

Kate Bainbridge, the first vegetative person Dr. Owen tested with positron emission tomography (PET), eventually recovered her mental faculties. "I was unresponsive and looked hopeless," she later told him in a note, "but the scan showed people I was in there. It was like magic, it found me." Today, she's angry at the doctors who ignored her discomfort because they assumed she wasn't feeling anything. The reason I was dreaming about ice cream—another serialized dream also involved ice cream—is probably because I was left uncovered in a frigid room.

Now at Canada's Western University, Dr. Owen and his team recently conducted an fMRI study in which a man who had been vegetative for sixteen years responded with nearly identical brain patterns as the study's healthy controls while watching "Bang! You're Dead," an episode of *Alfred Hitchcock Presents* (Naci et al. 2014). This indicated that he was following the suspenseful plot. Regarding the subject, Jeff Tremblay, Dr. Naci said, "For the first time, we show that a patient with unknown levels of consciousness can monitor and analyze information from their environment, in the same way as healthy individuals. We already know that up to one in five of these patients are misdiagnosed as being unconscious and this new technique may reveal that that number is even higher." Since the Hitchcock experiment, they have tested patients using Charlie Chaplin's *Modern Times* and *The Lion's Cage*, which, according to Dr. Naci, have shown similar results.

If Mr. Tremblay is watching his own Brain TV, is he now seeing images of a little boy with a gun? Are the subjects of the Chaplin study imagining themselves caught in the cogs of a giant machine? Perhaps someday, through fMRI or emerging treatments, they will be able to tell us. When that day comes, what are the odds that they will report seeing the afterlife after all those years? You'd think their dead relatives would eventually return to the light so they can find something better to do.

Though many of these patients are misdiagnosed, without proper screening it's impossible to know which ones.

I used to feel sorry for people clinging to the desperate hope that their vegetative loved ones would recover. I still feel sorry for them, but their hope no longer seems so hopeless to me. I worry that life-and-death decisions are being made based on inadequate testing and incomplete knowledge.

In my case, the minute the doctors saw the stroke damage they assumed I was beyond hope. The Glasgow Coma Scale wasn't even performed, and it's just a low-tech behavioral checklist. I was in a state-of-the-art hospital; imagine a patient in a less advanced facility.

My neurologist told me that the reasons I've recovered so well are that I was younger than the average stroke victim and most of my brain damage was in the watershed areas. Watershed areas lie between two major arteries. By the time blood reaches these sections, there's less oxygen in it. It's a bit like a wetland fed by two trickling tributaries. Together, they provide just enough water, but when the flow diminishes, the land between the tributaries dries up. As she explained, watershed areas don't generally control vital functions. They die more quickly than more important regions, but they also spring back faster after damage has occurred. Ain't evolution grand?

The "string of pearls" pattern of my watershed-area stroke damage should've been obvious to the neurologists examining my MRI. I can't say why they didn't add that evidence to my relative youth when predicting my chance of recovery. They did perform an electroencephalogram (EEG), which showed, not surprisingly, that I still had brain activity. Again, I don't know why that didn't figure into their evaluation. Perhaps they didn't consider the mounting evidence that there is more awareness in the comatose and nearly—but not most sincerely—dead than previously realized.

Regarding the tennis study, "In the Blink of the Mind's Eye" states, "This technology does more than open up the possibility of communicating with people thought to be unconscious and unreachable. It also suggests that neuroimaging must eventually be integrated into the clinical assessment of many patients who are vegetative or minimally conscious. This is a dramatic finding and a potential game-changer for clinical practice" (Finns and Schiff 2010). If that happens, there will be fewer seemingly miraculous recoveries because they won't be such a surprise.

The perceptions of stricken brains

are hardly inexplicable if awareness is more like a dimmer than an on/off switch. Moreover, NDEs can't be proof of mind/brain separation if the brains of those experiencing them are still active. Covert cognition fills many blanks.

My OBEs felt like imagined perspective shifts, but the sensation of floating outside your body can be electrically stimulated in the brain (Blanke and Arzy 2005). Furthermore, REM intrusion, which causes blended dream states like lucid dreaming, may be responsible for the fantastical qualities of NDEs (Nelson et al. 2006). "I see it [the NDE] as an activation of certain brain regions that are also active during the dream state," said Nelson. The study adds, "Under circumstances of peril, an NDE is more likely in those with previous REM intrusion." I sometimes lucid dream spontaneously, as I did in the coma-dream. The hallucinations James Randi has reported seeing while awakening from surgery were probably due to REM intrusion.

While I was comatose, Keith told me about his future plans for us, most of which I remembered when I awoke. He would start telling them again, and I would say, basically, "Been there; heard that," albeit through his doppelganger. Yet, at the same time Keith was telling me these things, the doctors were advising him to give up hope that I would ever fully recover. Indeed, they said rehabilitation of any sort would be futile, despite the fact that every time I experienced a new stimulus my wakefulness improved. I can't help wondering if medically supervised stimulation might have helped me emerge from the PVS sooner—as happened with Kate Bainbridge after she was "found." It would've certainly shortened my recovery. Instead, I was written off as a basket case after the MRI, which, ironically, may have jumpstarted my awareness like a dead car battery. It's the earliest event that appeared in the coma-dream, and after the stress of the scan, I displayed new hints of arousal.

Today, I have no signs of cognitive impairment, nor have I since that first conscious moment. How embarrassing for the doctors who wrote me off. Indeed, I don't believe I was even in a coma when I regained consciousness. The comatose don't have sleep-wake cycles, which is why their eyes remain closed. So, I was vegetative, but not under the restrictive *Merck Manual* definition. Ms. Bainbridge wasn't misdiagnosed; she fit the criteria for PVS. It's the term that needs revision.

I used to feel sorry for people clinging to the desperate hope that their vegetative loved ones would recover. I still feel sorry for them, but their hope no longer seems so hopeless to me. I worry that life-and-death decisions are being made based on inadequate testing and incomplete knowledge. Ms. Bainbridge and others who were in the same situation have expressed similar concerns. Nurses gently suggested to my mother that my quality of life was poor, which she took as a hint that I should eventually be taken off life support.

Vegetables rarely write articles, however. My recovery is still ongoing—I was so deconditioned after the long period of complete inactivity I could barely lift my head—but my quality of life is excellent. In fact, I feel an increased sense of purpose and self-confidence. Though I don't believe my recovery was a gift from God, I do view my second chance as a gift.

And speaking of gifts, last Christmas, Keith and I walked into the ICU with a gift basket to thank the medical personnel who saved my life. Some of them didn't recognize me upright. On the basket, we taped a collage of pictures taken during our strength-building walks. Many of the ICU workers cried; some said my recovery was a miracle. But it was no act of God that saved my life—it was science. Massive doses of antibiotics scrubbed the Legionella from my system like an antivirus program (or should I say antibacterial program?), halting my septic shock. A respirator and dialysis bought my failing organs time, and they gradually came back online. And, after six weeks, my brain finally rebooted. The human body is a marvelously evolved machine, even though, with my bad back, I often wonder if bipedalism was such a good idea.

The doctors and nurses taking care of me were responsible for giving me this second chance, and for that I'm obviously grateful. But maybe we should be giving more respect to the amazing resilience of the human brain and be more humble about the limits of our knowledge about it. And while we're at it, let's not underestimate the boundless powers of imagination, where polar bear cubs churn ice cream with Big Wheels and where flying somewhere over the rainbow doesn't require an out-of-body experience. ■

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Stephanie Savage's first published work appeared in *American Atheist Magazine*. Though this is her first feature article, she's published many short stories, usually humorous and often fantastical. Her recent experience inspired her to tell her own absurd and unlikely tale. "Without a Prayer of a Chance," an essay about believers' reaction to her "miraculous" recovery, will appear in a future issue of *Free Inquiry* magazine. She regularly writes about covert cognition in her recovery blog at http://www.comachameleon.com. She can be reached at comachameleon2013@gmail.com.

ADVERLYING: Disliking Advertising from an Informed Perspective

Some accusations levied against advertising are undeserved. But then, some are deserved, though perhaps not in ways you may have heard or assumed. Meanwhile, not a few bad apples engage in a heinous advertising tactic that goes largely unnoticed.

STEVE CUNO

Quelle surprise. In yet another poll, 36 percent of respondents rated the "honesty and ethical standards" of advertising people "low/very low."[1] It's a wonder Gallup bothers asking anymore. I'd take umbrage at the public's dim view of my profession were it not for one sticking point. Namely, that it isn't entirely unwarranted.

But it isn't entirely warranted, either, and it seems to me that if you're going to dislike what I do for a living, you may as well dislike it from an informed perspective. Space and lethargy do not permit addressing every abuse laid to advertising's charge, so I shall deal with three that I hear most often: that advertising controls behavior; short of controlling, that advertising manipulates by unfair means; and that advertising lies at the root of many a societal ill.

Then I shall wrap up with a look at an advertising abuse that I think could do with more outcry than it receives.

Claim: Advertising Controls Behavior

In 1957, marketing researcher James Vicary held reporters rapt with results from an advertising experiment. Every five seconds for one-3000th of a second, Vicary had flashed "Hungry? Eat popcorn" and "Drink Coca-Cola" onscreen during showings of the movie *Picnic*. The flash was too brief for the conscious mind to register, but not for the subconscious. Over a six-week trial, Coke sales rose 18.1 percent. Popcorn sales rose 57.7 percent. So great was public outrage that hardly anyone noticed when, five years later, Vicary admitted to having made the whole thing up (Subliminal advertising 2003).

Conveniently published the same year Vicary held his press conference, Vance Packard's bestseller *The Hidden Persuaders* (1957) fanned the flame. Often deferring to Vicary's alleged expertise, the book served up terrifying gems like this:

> Housewives consistently report that one of the most pleasurable tasks of the home is making a cake . . . James Vicary made a study of cake symbolism and came up with the conclusion

> that "baking a cake traditionally is acting out the birth of a child" so that when a woman bakes a cake for her family she is symbolically presenting the family with a new baby, an idea she likes very much.

Or this:

> Mr. Vicary set up his cameras and started following the ladies as they entered the store. The results were startling, even to him. . . . The ladies fell into what Mr. Vicary calls a hypnoidal trance, a light kind of trance that, he explains, is the first stage of hypnosis . . . the main cause of the trance is that the supermarket is packed with products that in former years would have been items that only kings and queens could afford, and here in this fairyland they were available.

Those damnable advertisers! Women who thought they were buying cake mixes were but sating an innate baby lust while lost in a hypnoidal[2] trance.

Such nonsense hasn't gone away. The 2004 PBS documentary *The Persuaders* shows child-psychiatrist-turned-marketing-consultant Clotaire Rapaille advising a French company to sell cheese in America in resealable plastic pouches. The idea was not new. Rapaille could have advised his client, "Do what U.S. cheese marketers do, duh." Instead he produced a convoluted metaphor perhaps worthier of his hefty consulting fee:

> . . . in America the cheese is dead, which means is pasteurized, which means legally dead and scientifically dead … plastic is a body bag . . . the fridge is the morgue; that's where you put the dead bodies . . . in France the cheese is alive . . . you never put the cheese in the refrigerator, because you don't put your cat in the refrigerator. . . . (Rapaille 2003)

Those damnable cheese marketers! Just as 1950s women could not resist birthing cakes, modern Americans cannot resist snacking on well-preserved corpses.

Journalism professor Wilson Bryan Key rekindled subliminal advertising fears in the 1970s. Key claimed that sexual images hidden in photos of everything from ice cubes to fried clams made consumers buy against their will (Key 1974; 1980).

No less than advertising industry icon David Ogilvy jumped on the mind-control bandwagon in 1983:

> I once myself came near to doing something so diabolical that I hesitate to confess it even now, 30 years later. Suspecting that *hypnotism* might be an element in successful advertising, I engaged a professional hypnotist to make a commercial. When I saw it in the projection room, it was so powerful that I had visions of millions of suggestible consumers getting up from their armchairs and rushing like zombies through the traffic on their way to buy the product at the nearest store. Had I invented the *ultimate* advertisement? I burned it, and never told my client how close I had come to landing him in a national scandal. (Ogilvy 1983)

Evidence for hypnotism as a means of mind control is as lacking (Randi 2007) as evidence for Ogilvy's tale. He gave no account of testing the commercial's zombification power, only of being a horrified focus group of one. We cannot test the commercial for ourselves, because he allegedly put a match to the only copy. No writer, director, actor, lighting technician, editor, or even the hypnotist ever came forth. No raw footage or script ever surfaced. This anecdote smells of self-promotion à la Vicary.[3,4]

If you wonder why an industry in the business of creating positive images would promote myths harmful to its own, consider that advertising agencies needn't appeal to consumers. Worse things could happen to an ad agency than for a *client* to believe it has magic powers. Yet if advertising really had such power, the best minds in the advertising business would not have produced market failures like the following, which I swear I'm not making up: Colgate frozen dinners, Bic disposable underwear, *Cosmopolitan* magazine yogurt, McDonald's clothing, Ben-Gay aspirin, Smith & Wesson bicycles, Life Saver's soda, Frito-Lay lemonade, Harley-Davidson eau de toilette, New Coke, and even the popular Taco Bell Chihuahua.[5]

Despite ample debunking and no evidence of effectiveness,[6] subliminal advertising allegations persist.[7] The reality is that if advertisers can control minds, they hide it well.

Laboratories, Sex, and Other Delights

Some mind-control scares come out of laboratories. Subjects view ads, commercials, or web pages while hidden devices track their eye movements,[8] an fMRI looks for brain areas to light up, or a machine measures their galvanic responses. Should eyes fixate or move, brain areas light up, pupils dilate, or skin temperatures change, the lab's PR department sends out a press release.

Despite ample debunking and no evidence of effectiveness, subliminal advertising allegations persist.The reality is that if advertisers can control minds, they hide it well.

But there is a problem in leaping from "had an effect in a lab" to "made you buy in a marketplace." Early in my career, I took over advertising for a company that marketed to the trucking industry. My predecessor had adorned ads with half-dressed women. I persuaded the company to let me substitute photos of trucks, combined with straight talk about the product. I suspect my predecessor's campaign would have produced more dilation, fixation, galvanic responses, and brain light-ups than mine. But in the real world,

truckers quit hanging our ads on garage walls. Oh, and sales quadrupled.

The case is anecdotal, but its basis is not. I happened to know that the legendary John Caples, who built his career on controlled advertising tests, had written this:

> Before the widespread use of readership surveys, some ad men believed that the way to stop a male reader was to show a picture of bathing beauty. Apparently this technique may create desire for the girl, but it does not seem to create desire for the product being advertised. . . . One interesting observation that has come out of readership surveys is that men tend to look at ads containing pictures of men and that women tend to look at ads containing pictures of women. . . . A man figures that an ad containing a picture of a man is likely to be an ad for a man's product and that an ad containing a picture of a woman is likely to be for a woman's product. (Caples 1932)

The point is not to address whether sex sells,[9] but to illustrate that a laboratory response is a far cry from an actual purchase.

A 2011 study gained some attention among skeptics (*Skeptics' Guide to the Universe* 2011). Priyali Rajagopal from Southern Methodist University and Nicole Votolato Montgomery from College of William and Mary found that advertising could convince people they had sampled popcorn that in fact they had not (Rajagopal and Votolato Montgomery 2011). If creating a false memory constitutes mind control, then there you have it. But note that the study did not demonstrate that the false memory made anyone buy anything. Given the poor track record of other laboratory findings in the real world, I have my doubts. It is easier to induce a response in a lab than to make someone rise from a chair and head to a store.

With no evidence to support the alleged power of subliminal or hypnotic advertising… you may think that charges of mind-controlling advertising look somewhat like garden-variety conspiracy theories. You may be on to something.

One reason laboratory tests tend not to prove predictive is that people do not experience advertising in a lab the way they do at home. In a lab, participants know they are being observed, which affects behavior. Moreover, they focus on the commercial or ad they are shown. At home, no one is observing them, and commercials and ads compete for attention with bathroom trips, phone calls, texting, tweeting, Minecraft, magazines, in-person conversation, muted sound, Facebook, scratching, channel surfing, web surfing, napping—you name it. Nor do families gather at the tube. The same household may have multiple TVs tuned to different stations or streaming commercial-free content.

With no evidence to support the alleged power of subliminal or hypnotic advertising, and no evidence suggesting that laboratory tests are predictive, you may think that charges of mind-controlling advertising look somewhat like garden-variety conspiracy theories. You may be on to something.

Claim: Advertising Manipulates Behavior

Use *manipulate* if you like, but I think a more apt term is *influence*. Advertising pleads guilty. This is not a little circular, since to influence is pretty much the point of advertising. But of course the real question is whether advertising goes about said task *unfairly*.

Let's start with the basic way advertising can influence. If you need new tires and see a tire dealer's flyer, you might visit that dealer. If you dropped your smart phone in the toilet, an ad for a waterproof phone might win your attention. If you're allergic to your eyeliner, an ad for a hypoallergenic one might attract you. I hope you'll agree that influence of that sort is benign, possibly even useful. But then, those are products you might want. Advertising that influences you to buy products that you *don't* want is quite another matter. Isn't it a given that slicker, smoother, glitzier, better designed, more entertaining, and more memorable advertising can lodge itself in your mind so you'll reach for the advertised brand, want it or not, without knowing why? Why else would advertising agencies boast of work that is creative, original, memorable, and likable? Why else would clients keep spending big money on slick, creative ads?

Beware assuming that advertising people make rational decisions. Advertisers tend to deem a campaign successful if it "tested well" in a focus group, was recalled by a respectable percentage of a target market, won awards, or coincided with a sales increase. That focus groups are not predictive, remembered campaigns fail and not-remembered ones succeed, awards have no bearing, and "correlation does not mean causation" should make sense to most skeptics, but it does not to many an advertiser.

An exception is direct response advertising, a subset that concerns itself less with brand recognition and more with measured actions. More than a century of controlled direct response tests have revealed consistencies in marketplace behaviors. Want more people to click a link? Spell out, "click here to. . . ."[10] Want to increase readership? Avoid light type on a dark background (Bodian 1995). Want more people to open your snail mail? Use an unusual envelope (Rosenspan 2011). Want more people to call a number on the TV? Avoid Prime Time (Eicoff 1982). Want more people to take action? Offer a freebie for a limited time.[11] Direct response advertising has thousands of such "rules."

Do not be misled. Like spelling out "click here," most direct response rules do not so much win buyers as avoid losing them. And "more people" typically refers to incremental gains. It is not unusual for a direct response advertiser to celebrate when 1 percent of a target market takes a desired action. Boasts of "doubling sales" can mean going from "99 percent didn't buy" to "98 percent didn't buy." Response rates of 2, 3, or more percent are not unheard-of, but every uptick waxes increasingly aspirational.[12] This is a poor showing indeed for a would-be manipulator.

Equally telling is that direct marketers achieve their greatest gains by fine-tuning *reaching the right audience* and *offering the right gift incentive*. Fine-tuning creative work, the alleged stuff of manipulation, receives lowest priority. Many direct marketers hold that creative work accounts for only 20 percent of results.[13]

If you worry about the extent of direct response knowledge, take heart. Brand advertising, which is most advertising you see, tends to disdain and ignore it. *Why* would make an article in its own right.

Advertising seeks to persuade. Direct response advertising does its best to play to proclivities. But neither can subvert will.[14,15] None of this should surprise skeptics, who would likely scoff at a stage hypnotist making similar claims of mind control and manipulation.

Claim: Advertising Contributes to Social Ills

There is an abundance of inoffensive advertising, but good apples do not preclude the existence of bad. One would be hard-pressed to name a societal ill that advertising hasn't promoted, piggybacked on, or tacitly endorsed. Circa 1907, a logo for Bluthenthal & Bickart's Alligator Bait whiskey featured a naked African American child tromping through a bayou. In 1957, Clairol began promoting hair coloring products with "Does she or doesn't she?" In 1965, "Mrs. Olson" began prescribing Folgers Coffee to women as a cure for the complaining husband. In 1967, Fritos introduced the Frito Bandito, an animated Mexican thief voiced by Mel Blanc whose mission in life was to steal your corn *cheeps*. In 2007, commercials for Haggar Clothing Company featured a pair of white, male, middle-aged spokesbrutes reveling in intolerance, bullying, vandalism, personal violence, and sexual harassment. In a 2008 TV commercial aired in the United Kingdom, Mr. T fired Snickers bars at a speed-walker to make him run "like a real man," closing with the tagline, "Get some nuts." Just last year, DC Metro created posters suggesting that women would rather talk about shoes than think. Not to be overlooked are ads promoting products that harm the environment, threaten health, foster unwise debt, play upon greed, and more.

These are all valid charges, leaving the advertising in question no place to hide. But here's a disturbing reminder: Greed, racism, sexism, cruel stereotypes, and other forms of marginalizing existed long before the first ad was penned. Advertising picks up, capitalizes on, and spreads ills, but it rarely authors them. When consciousness rises, advertising eventually follows.[16] This is in no way a defense. When advertising perpetuates and, worse, promotes social ills, it deserves to be called on the carpet. But there is value in remembering that purging advertising of social ills begins with purging society of them.

As it is naive to pretend that advertising causes no harm, it is equally naive to pretend that it does no good. Advertising helps build and strengthen economies. If you have a job, it is thanks to people handing over dollars to your company, which is thanks to someone who persuaded them to do so, whether through an online banner, Twitter or Facebook mention, billboard, radio spot, brochure, magazine ad, or word-of-mouth. Mass advertising enables mass production, which lowers costs so that products can be made affordable and available where they wouldn't otherwise. Trade, of which advertising and marketing are an integral part, helps keep nations from warring with one

One would be hard-pressed to name a societal ill that advertising hasn't promoted, piggybacked on, or tacitly endorsed … In 1967, Fritos introduced the Frito Bandito, an animated Mexican thief voiced by Mel Blanc whose mission in life was to steal your corn *cheeps*.

another (Pinker 2011). And, though I cannot speak for you, I am grateful that advertising has sometimes pushed what was once considered needless, like toothbrushes, daily bathing, and deodorant.

I would love to believe that intrinsic morality would prevent most advertising people from manipulating or controlling minds were such possible. Having seen many a lofty ideal dispatched where dollars were involved, I know better. So perhaps the most persuasive debunking of unfair persuasion techniques is that most practitioners do not bother with them. Equally telling is that, unlike consumer publications, advertising trade journals and how-to books do not bother with them, either.

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Not That You Asked, but Here Is What I Dislike in Advertising

Crowing about nonexistent abuses may blind us to an abuse that is real and pervasive. I refer to a tactic that I consider immoral and at times dangerous. It is often overlooked, perhaps because it lacks sensationalistic appeal. It is called *lying*. I wish to draw attention to three kinds: two of them legal, one not.

Puffery is an exaggerated boast presumably understood not to be taken seriously. Surely few consumers believe that Keebler employs elves, Red Bull enables flight, and women cannot resist a man drenched in Axe. You may differ, but I find puffery of that sort arguably harmless. Yet when Kellogg's puffed in the 1960s that Apple Jacks cereal "keeps the bullies away," I wonder how many kids consumed a bowl and went looking for trouble. And I disagree with a Fifth Circuit Court of Appeals ruling that allowed as puffery Papa John's Pizza's line, "better ingredients, better pizza,"[17] especially since the company's website (www.papajohns.com/about/) calls the cagily incomplete comparative a "brand promise."

The other legally permissible lie is the *weasel*, and I have no tolerance for it. A weasel is technically true but designed to mislead. Fad diets weasel when they trumpet miracles disclaimed in tiny type as "not typical." So do multi-level companies that imply but do not explicitly claim that distributors are a few weeks from untold riches. So do natural and organic products that capitalize on the appeal to nature fallacy. So do so-called alternative medicines, whose large type claim treatment and prevention while the small type offers the legally prescribed weasels: "These statements have not been evaluated by the FDA" and "This product is not intended to diagnose, treat, cure or prevent any disease."[18]

Last on the list is out-and-out lying. There is nothing legal about it. How do no-goodniks get away with it? Some operate from a country that provides sanctuary. Some rightly expect regulatory bodies to be slow to action.[19] Some keep operations local, knowing that the Federal Trade Commission pursues only interstate cases. Some hide their identity and close shop or move before the law catches up. Some count on projected profits to be greater than projected fines.[20]

Wink or not at harmless puffery, but do not sit still for over-the-line puffery, weaseling, and out-and-out lying. Withhold your business. Warn friends. Blog. Send the offending advertiser angry mail. Write editors. Write legislatures. Make a public stink.

Fair being fair, I'd also suggest rewarding honest advertisers with your business and public praise.

There is nothing an illicit advertiser would like better than to keep on bilking people under our noses while we tilt at mind-control windmills. Let's not. ■

Notes

1. Car salespeople and members of Congress fared worse. See http://www.gallup.com/poll/159035/congress-retains-low-honesty-rating.aspx.

2. Vicary had no more compunction about making up words like *hypnoidal* than about making up marketing tests.

3. Did Ogilvy know better? Maybe not. He championed scientifically tested advertising, but he also resorted to graphology when evaluating job applicants.

4. *Ogilvy On Advertising* and Ogilvy's prior book, *Confessions of An Advertising Man*, were advertising feats in their own right, at once best sellers and book-length advertisements for his agency. The occasional tall tale notwithstanding, both contain a good deal of sound advice for anyone who wants to create advertising.

5. I attended a presentation by Taco Bell's advertising head, who detailed how sales plummeted even as awareness and popularity of the Chihuahua soared. Sales recovered after Taco Bell retired the doggy and returned to close-ups of food.

6. Including by Skeptical Inquirer. See Pratkanis, Anthony R., *The Cargo-Cult Science of Subliminal Persuasion*, Volume 16(3), Spring 1992, and Moore, Timothy E. *Subliminal Perception: Facts and Fallacies,* Volume 16(3), Spring 1992.

7. Google it if you don't believe me.

8. This is old news with new toys. When

I was a college student, we studied how eyes scanned printed pages. Most American readers look first at the upper left quadrant of a page, scan to the right, zig to the lower left, and then scan right again. Our professor told us to keep that in mind when designing a page. I thought, *We need a test to tell us that Americans read left-to-right and top-to-bottom?*

9. Usually, sex sells only when sex is relevant, such as a perfume ad using sensuous images and situations.

10. That is, as of this writing. What works online has been known to change overnight.

11. Industry standard. I have validated it with my own testing over a range of products, prices, and markets. Clients are often surprised to learn that the power of the free incentive offer, far from preying on the less sophisticated, tends to increase with the education and income level of the target market.

12. The response rate to expect varies by product. Sometimes one-half of 1 percent is asking a lot. On rare occasions, 10 percent or more may be attainable. The desired action also matters. Responses tend to be higher when the market is asked not to buy but only to inquire.

13. Direct response advertisers call this "The Law of 40 40 20." As far as I have been able to determine, the percentages come from thin air, but the importance of targeting and incentives over creative work is well established. My own testing has borne this out as well.

14. Else, Skeptical Inquirer would have a lot more subscribers. All I know so far is that Version B of this past year's mailer won more subscribers than Version A. If I cancel A and continue with B, is that unfair manipulation?

15. Let's not get into the Dennett-Harris debate on free will here.

16. Albeit sluggishly, grudgingly, and sometimes kicking and screaming. Even today I must remind art directors setting up photo shoots that not everyone is middle class and white, and writers that not every shopper is "she." Some resent it. Tough. I'm their boss.

17. Pizza Hut brought the suit. http://smallbusiness.chron.co/difference-between-false-advertising-puffery-66945.html.

18. Senator Orrin Hatch, who represents my home state of Utah, is largely responsible for that. Don't look at me. Every six years, I vote for his opponent.

19. Competitors bring false advertising actions more often than regulatory bodies do.

20. The makers of Airborne survived combined fines of $53 million, and Kevin Trudeau's books continue selling, earning him royalties while he serves prison time.

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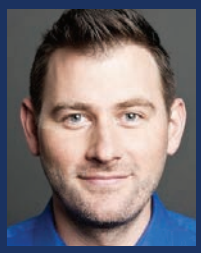

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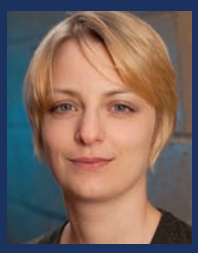

Lindsay Beyerstein (cohost) is an award-winning investigative journalist and staff writer for *In These Times*. Her work has appeared in places such as *The New Republic, Reuters, Slate, Salon, Ms. Magazine*, and *The New York Press*. Wait to see what stories she tells with her guests on *Point of Inquiry*.

Do We Really Want to Believe in UFOs?

Is belief in UFOs reassuring to those who fear we might be alone in an otherwise godless or purposeless universe?

KLAUS BRASCH

The July/August 2014 issue of the Skeptical Inquirer, which focused on science and religion, underscores once again the common threads among unquestioned faith, pseudoscience, and putative extraterrestrial influences on humanity.

It stands to reason that early humans were greatly affected by astronomical events. They could observe them but not comprehend them. Celestial phenomena like eclipses and comets, for instance, were not just far removed from the physical world our ancestors inhabited but also mystifying and often fearsome. Consequently associating them with gods, bad omens, angels, and demons was a natural leap of faith. The question now is why does this mindset still persist today? Apart from science-adverse fundamentalist sects in traditional religions, why have unlikely beliefs like Raelism, Heaven's Gate, Scientology, and others arisen in modern times? Why are they uncritically accepted—often by intelligent, educated followers?

These are not new questions of course; they have been widely addressed by many authors. There is general consensus though (e.g., Dawkins 2006, 190; Hunt 2003, 299; Shermer 2003, 32) that, among other factors, the origins of religious beliefs have deep biological roots. We are genetically and psychologically predisposed that way because we seek order amid chaos, and if there is no obvious order, we invent it (as in the case of intelligent design). Second, pattern-seeking evolved as a survival mechanism in humans, helping us recognize potential predators or enemies in the environment. By extension our ancestors sought patterns everywhere in nature, leading to animism and spirits, mythological figures in the sky, and eventually to supreme beings that created and ruled the world. A dominant solar deity, for example, is found in virtually all ancient religions.

I would place belief in UFOs and alien visitations into similar categories. These have taken on a quasi-religious aura among staunch adherents, and no amount of rational evidence to the contrary will dissuade them. This was brought home to me recently after I gave a series of public talks at Lowell Observatory on the search for life in the universe. Topics included the history of life on Earth, its possibility on Mars and Europa, the SETI project, and, lastly, a talk titled "UFOs: Fact or Fiction?" All were popular and well attended, but predictably, the UFO talk attracted a packed house. My intent was to show that while the search for life elsewhere is a legitimate and serious scientific endeavor, there is in fact no convincing or verifiable evidence that we have been visited by extraterrestrials now or in recorded history. I provided numerous examples of misidentification, natural phenomena, and outright hoaxes. I also pointed out that thousands of professional and amateur astronomers worldwide scan and image the skies constantly looking for comets, asteroids, space debris, and supernovae, but they never seem to see any alien spaceships.

What struck me as particularly telling during follow-up question periods was how much people really *want* to believe there is some form of alien intelligence out there, especially one more advanced than us that can provide guidance and wisdom to humanity. When I asked the audience of some 150 about that, most hands went up. A staunch minority simply did not accept my contention that the bulk of UFO reports can be dismissed as mistakes, hoaxes, or natural phenomena, maintaining instead that governments are hiding the "truth" from us, and that since I was a "government" scientist I was just toeing the official line. A solid majority, though, while convinced by my skepticism about UFOs, also seemed genuinely saddened by that realization. Some asked if I really thought it possible that we might be alone in this vast, impersonal universe and why would God have done that? Surely there has

to be more to it and some reason or plan for our existence. That seems to be the crux of the issue for most people: the fear that we might be totally alone in a seemingly purposeless cosmos. Because of that, many people don't like what science tells them, as it implies a chaotic rather than an ordered universe, and the notion that other advanced civilizations exist "out there" provides a measure of reassurance that it isn't so.

While we can readily dismiss most UFO reports as nonsense, it's important to appreciate that many ordinary citizens, including police, professionals, and experienced pilots, are genuinely convinced they have seen unexplainable objects in the sky. It also explains why polls and surveys consistently show that a considerable percentage of Americans believe we have been visited by aliens. This stems in part from a general ignorance about the sky and things astronomical—e.g., fireballs, Venus, bright satellites, and the like—but does not make their observations any less real to them.

By way of example, I can recall three initially quite compelling sightings in my life. The first was as a teenager in Toronto in the mid-1950s, at the height of the "Flying Saucer" craze. Some friends and I were playing ball on a foggy fall evening, when we noted two brilliant oval-shaped disks in the sky, apparently flying in formation. There was no sound, just an eerie silence, muffled no doubt by the translucent fog all around us. Naturally, we were mesmerized. I had just finished reading Desmond Leslie and George Adamski's titillating book *Flying Saucers Have Landed*, complete with Adamski's supposed photographs of them. Our two objects looked uncannily like those photographs. To add to the drama, the disks veered sharply and then "flew" directly north at incredible speed. We were convinced that either they were alien spaceships or—as was rumored at the time and later proven true—the Canadian and American governments were experimenting with saucer shaped aircrafts at the Avro facility near Toronto. The emerging scientist in me thought the latter was the more likely explanation, but of course I was secretly hoping they were actually flying saucers. The bubble burst a few minutes later. First we heard the engines and then saw the huge military transport plane with dazzling landing lights fly over us toward the airport. Had we not stuck around, however, all of us would have gone home that night convinced we had seen two of Adamski's Venusian "scout" ships!

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Sadly, despite overwhelming evidence that Adamski's photos were fakes and that his alleged visits to Venus and other planets were pure fantasy (see, for example, http://www.skepticreport.com/sr/?p=101), a dedicated website for his claims persists. Adamski published his *Inside the Spaceships* in 1955, and among the most revealing aspects of this book are the following quotes, both indicative of the messianic or prophet-like aspirations he and his followers ascribed to alien visitations. The first quotation is from a foreword by Charlotte Blodget, described as Mr. Adamski's literary aide in writing this book:

> The fact that Adamski possesses more wisdom than formal education is, in his case, an asset, leaving him free of the fetters which too often shackle the academic mind. At the same time, he is amazingly well informed on most subjects, including world events and the causes that lie behind them. Perhaps it is partly owing to this that he is something of a prophet.

The second quote is from a letter Adamski wrote to Blodget:

> Perhaps the Brothers from other planets are waiting until the inner being of men on Earth stirs ever so slightly toward a wakening stage, with desire for a better living amongst his fellowmen. Perhaps faith is of paramount importance; not blind faith, but that knowing

> faith which comes only from within and cannot be swerved from what it *knows* to be true.

My second UFO "encounter" took place in 1980 during a visit to Arizona and New Mexico. My sister and I were driving east on I-40 from Flagstaff to Gallup just after sunset when we saw a circle of flashing red lights slowly moving along the eastern horizon. At that moment, we were passed by speeding police cruisers and an ambulance with sirens blaring, all heading toward the circle of light. We next passed a small off-highway community with people looking and pointing eastward as well. The UFO looked straight out of the movie *Close Encounters of the Third Kind*, which we had both seen recently. Nervously, my sister reached for binoculars on the back seat to look at what we were chasing. Finally, just as the UFO was about to land, she said "Oh, crap," and told me what she had seen. José Ortega's Gift shop, it turned out, was advertising via flashing lights on the wings of a small plane. So much for close encounters of the third kind! Once again, however, how easily we might have been fooled. Our natural inclination was to connect the dots: strange lights in the sky, cars racing toward them, people pointing; it must be a genuine UFO.

"Did Spielberg's 'Close Encounters' herald the advent of a new religion?" asked Gabriel Sanders in *Tablet Magazine* some thirty-four years later. He quotes film critic Stanley Kauffmann from a piece titled "The Gospel According to St. Stephen" in *The New Republic* (December 10, 1977): "Close Encounters of the Third Kind ... seemed to me 'not so much a film as an event in the history of faith.'" In 1988, comparing *Close Encounters* and Spielberg's movie *E.T.*, Kauffmann wrote:

> Hope for communication between our planet and other places—thus, by extension, hope for continuance and nature of the human race—lies more in feeling (the openness of the child) than in intellect (the grim efficiencies of the adult). The visitors from Out There are assumed to have higher intelligence, if only because they got here and we didn't get There; but we are happy to be their inferiors. In a way it's a relief to relegate adulthood to them, to keep ourselves children, free for fuller feeling. (http://www.newrepublic.com/article/film/76829/the-gospel-according-st-steven)

In both movies, the allusion to advanced aliens descending from on high as potential saviors of humanity seems clear.

Our natural inclination was to connect the dots: strange lights in the sky, cars racing toward them, people pointing; it must be a genuine UFO.

My third UFO sighting occurred in the late 1990s at the California State University Desert Study Center, where I was hosting the annual science dean's retreat. As an astronomy aficionado, I organized a star party for my dozen or so guests under the very dark Mojave skies and showed them various celestial objects at the Center's observatory. It was an exceptionally clear night, and naturally the conversation soon turned to questions about life on other planets and the possibility that SETI might succeed in making contact with other technologically advanced civilizations. As if on cue, someone spotted an orange light due south of us. In total silence, the light slowly rose in the sky and was followed by another and another, all moving upward in unison. They hovered for a few minutes and then descended again. Amid nervous laughter, someone shouted "Real UFOs, perhaps?" I quickly turned a telescope toward the mysterious lights and discovered they were flares carried by helicopters! Only then did it dawn on us that we were witnessing night maneuvers at the 29 Palms U.S. Marine Corps base located about thirty miles south of us. I wonder, though, what we would have thought had we not had access to a powerful telescope. If a group of scientists was almost fooled, how might a less skeptical audience have reacted?

What can be learned from all this? Are humans primed to believe in a higher order or purpose, be that gods, intelligent design, or extraterrestrials? Does our tendency to "connect the dots" and seek patterns facilitate that? Do even rational people suspend disbelief when applied to improbable notions like UFOs if they really want to believe? There is certainly much evidence indicating the answer to these questions is yes (see Denzel 2002, 50; Sharp 2014, 52; Shermer 2003, 172). ■

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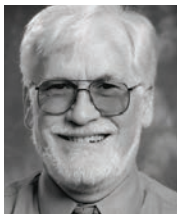


Klaus Brasch is emeritus professor of biology at California State University, San Bernardino, where he had also served as dean of the College of Natural Sciences and chair of the Department of Biology. He is now a lecturer and docent in the public program at Lowell Observatory in Flagstaff, Arizona. A lifelong amateur astronomer, he helped develop and teach courses on astrobiology.

Treemonisha: Scott Joplin's Skeptical Black Opera

More than a century ago, this now-famous American composer wrote an opera promoting education and the value of a skeptical perspective on superstition and supernatural claims.

BRUCE A. THYER

The American composer Scott Joplin (1867–1917) is deservedly famous for his many musical accomplishments, which culminated in a posthumous Pulitzer Prize in 1976. An African American, Joplin is perhaps best known for his many ragtime compositions such as the "Mapleleaf Rag," the theme song to the popular movie *The Sting*. Less well known are Joplin's operas. The first, called *A Guest of Honor*, appeared in 1903, and his second, *Treemonisha*, was begun in 1907 and completed in 1910.

The score of Treemonisha received a positive review in the *American Musician and Art Journal* in 1910 but the only partial performance Joplin heard was a self-funded 1915 concert read-through at the Lincoln Center in Harlem, New York. One ballet from Act II was publically performed in 1915, after which the score was lost. Rediscovered in 1970, the world premier of *Treemonisha* occurred in 1972, arranged jointly by the Atlanta Symphonic Orchestra and Morehouse College. Since then, it has enjoyed good runs, including sixty-five shows on Broadway in New York City and performances in London; Paris; Washington, D.C.; Houston; San Francisco; and Berlin.

The plot of *Treemonisha* will meet with approval from readers of the Skeptical Inquirer. The opera takes place on a plantation in Arkansas in 1884 where a band of traveling conjurors try to sell Monisha (Treemonisha's mother) a good luck charm. The magician Zodzetrick claims the charm will keep away enemies, bring good luck, drive away the blues, and keep Monisha's husband from drinking booze. Monisha's husband, Ned, angrily intervenes, saying the charm bag is useless. He exits the scene and the eighteen-year-old Treemonisha enters and admonishes the conjuror:

You have lived without working for many years.
All by your tricks of conjury.
You have caused superstition and many sad tears.
You should stop, you are doing great injury.

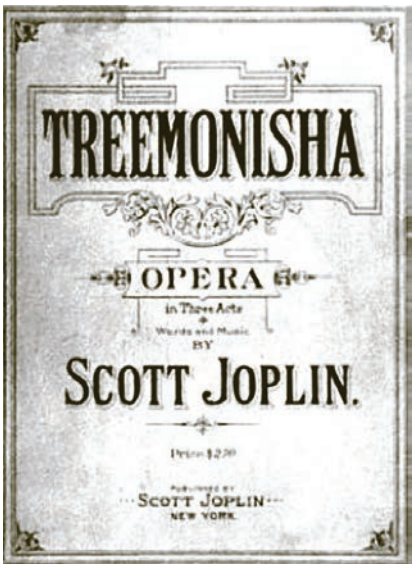
Offended, Zodzetrick replies:

You 'cuse me wrong
For injury I'se not done,
An' it won't be long
'Fore I'll make you from me run.
I has dese bags o' luck, 'tis true,
So take care, gal, I'll send bad luck to you.

Remus, a friend of Treemonisha's remonstrates:

Shut up old man, enough you've said;
You can't fool Treemonisha—she has a level head.
She is the only educated person of our race,
For many long miles away from this place.
She'll break the spell of superstition in the neighborhood.

Zodzetrick leaves, and the scene changes to a later harvest dance. Lucy, another friend of Treemonisha's, appears bound and gagged, having escaped from being kidnapped (along with Treemonisha by Zodzetrick and his band of conjurors). The latter are angry with Treemonisha, fearful that her open skepticism of their magical powers will interfere with their ability to defraud the community.



Luddud [a conjuror]: *Dis here gal don't believe in superstition.*

Zodzetrick: *Dat's de truth.*

Luddud: *She don't believe in conjury.*

Zodzetrick: *Dat's de truth.*

Luddud: *She's been tellin' de people dat dey should throw away their bags o' luck. Now, how are you goin' to get food to eat, When you can't sell yo' bags o' luck?*

Simon [another conjuror]: *Food will be hard to get, If we can't sell our bags of luck.*

As Treemonisha's friends organize to rescue her, Zodzetrick and his men plan to throw her into a wasp's nest, where she will be stung to death. While the conjurors lead Treemonisha to the wasp's nest, Remus, a friend of Treemonisha's dressed in a scarecrow's costume, approaches in the night, and the frightened conjurors flee, thinking the devil is coming after them. Treemonisha and Remus safely make their way home later that evening. Other friends arrive, with Zodzetrick and Luddud as prisoners, and the neighbors all wish to punish them with a serious beating. Treemonisha intervenes, saying that the conjurors should only be severely lectured. Treemonisha gives a speech on the value of doing right, never wrong. In the end, the neighbors agree with Treemonisha's request to forgive the conjurors, to shake their hands, and set them free. The community elects Treemonisha as their leader because of her evident wisdom.

Treemonisha presents a number of laudable themes including the value of education, the fraudulent nature of charms and spells, and the value of a skeptical perspective on supernatural claims, especially those requiring the gullible to pay large sums of money to con men preying on their superstitious beliefs. There is also recognition that sometimes seemingly harmless practices such as buying a good luck charm can become associated with genuine harm. Joplin deserves a great deal of credit for composing, over 100 years ago, a genuine opera centered on skeptical themes. Copies of the libretto to *Treemonisha* are available online, and portions of the actual performance, libretto, score, dance, and songs can be watched on YouTube. A two-CD performance and book on *Treemonisha* is also now available. ■

For Further Reading

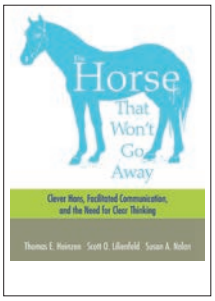
Berlin, E.A. 2013. A review of Scott Joplin. *Treemonisha*. Paragon Ragtime Orchestra and Singers. *Journal of the Society for American Music*, 7: 112–115.

Carlin, F. 2010. Treemonisha. *Financial Times* (April 6). London, UK. p. 11.

Bruce A. Thyer, PhD, is not quite certain he is a professor of social work at Florida State University in Tallahassee, Florida. He can be contacted at bthyer@fsu.edu.

The Return of Facilitated Communication

TERENCE HINES


The Horse That Won't Go Away
Clever Hans, Facilitated Communication, and the Need for Clear Thinking
Thomas E. Heinzen Scott O. Lilienfeld Susan A. Nolan

***The Horse That Won't Go Away: Clever Hans, Facilitated Communication, and the Need for Clear Thinking*. By Thomas E. Heinzen, Scott O. Lilienfeld, and Susan A. Nolan.** Worth Publishers, New York, 2014. ISBN 13: 978-1-4641-4574-2. 136 pp. Paperback, $29.95. Kindle edition: ISBN 10: 1-4641-4574-1, $16.99.

It's a cliché to say that good things come in small packages but in the case of this book (a mere 5.5 by 7.2 inches), the cliché is true. The 136 pages contain only three chapters. But these chapters tell a story that is historically fascinating and of great importance. The first is a retelling of the case of Clever Hans, the German horse that convinced not only the general public but many, almost all in fact, professors of psychology and horsemen that he had the intelligence of a young boy. Hans, you see, could answer questions put to him. Now, we're not dealing with a Mr. Ed here. Hans didn't speak. He tapped out his answers. You asked him what the square root of twenty-five was, and he tapped five times. The authors go into detail about Hans's "abilities" and the people he fooled. Readers with an interest in the history of psychology will especially enjoy the rare original photos of Hans and his owner, Herr von Osten, in action.

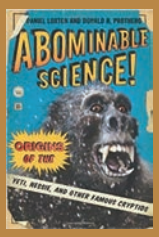
A clever graduate student, Oskar Pfungst, discovered the explanation for Hans's seemingly intellectual abilities. Von Osten was, unconsciously, signaling Hans when to stop tapping his hoof. So, in the example above, when asked a question like the square root of twenty-five, Hans would start slowly tapping. When he got to the "correct" answer, von Osten, or any other inquisitor, would look up or make some other small and unnoticed movement that would cue Hans to stop tapping. Pfungst revealed this by doing experiments in which Hans was unable to observe his questioner. In this situation, his responses were meaningless.

At first, von Osten accepted the fact that Hans was merely picking up subtle cues that caused him to stop tapping. But that didn't last for more than a day or two. Perhaps not surprisingly, von Osten promptly stopped any further experiments that might challenge his belief in the horse's intelligence. This is, the authors point out, a case of "naive realism" in which seeing something results in a specific belief about its causes without any attempt to examine whether or not the presumed cause is actually causal. In other words, "seeing is believing."

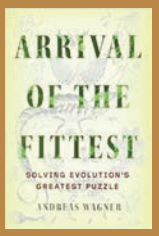
Of course, this tale has been told many times before. But here it is told for a unique purpose. Chapter 2 is titled "Clever Hands: The Facilitated Communication Story." This chapter highlights the similarities between the naive realism that led von Osten to believe that Hans was intelligent and the naive realism that led (and, sadly, still leads) practitioners of facilitated communication (FC) to believe that their students are really communicating. When doubts started to be raised about the validity of FC, experiments were conducted in which a facilitated child and a facilitator were shown different objects and the child was to type out the name of the object he or she, not the facilitator, saw. In dozens of published experiments in every case, every single one, the child always typed out the name of the thing the facilitator saw that the child could not see. The reaction from the FC camp was to charge that these failures were due to having to facilitate under stressful and unusual conditions. However, many of these studies were run by the same people who had previously facilitated with the children. And, according to FC propo-

[NEW AND NOTABLE

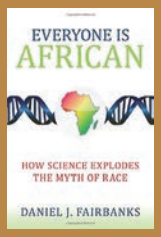
Listing does not preclude future review.



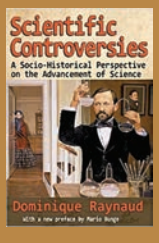
ABOMINABLE SCIENCE! Origins of the Yeti, Nessie, and Other Famous Cryptids. Daniel Loxton and Donald R. Prothero. First paperback edition of this much-praised, award-winning scientific examination of cryptozoology and all the major monster myths, which our reviewer of the original hardback, Sharon Hill, called "a sharp sword that cuts through the bogusness of popular monsterology" (November/December 2013). This is indeed a "definitive volume," one book every skeptic should have. Like the hardback, the paperback is beautifully produced, with heavy enameled paper and eighty-eight color illustrations. Columbia University Press, 2015, 432 pp., $19.95.



ARRIVAL OF THE FITTEST: Solving Evolution's Greatest Puzzle. Andreas Wagner. An award-winning evolutionary biologist, Wagner has found that species can innovate themselves far faster than scientists previously thought possible. In this well-written book about how innovations in nature occur, he shows how adaptions are driven not just by chance but rather by a set of laws that allow nature to discover new molecules and mechanisms in a fraction of the time that random variation would take. Wagner is a professor at the Institute of Evolutionary Biology and Environmental Studies at the University of Zurich, Switzerland, and an external professor at the Santa Fe Institute. Current/Penguin Group, 2015, 280 pp., $27.95.



EVERYONE IS AFRICAN: How Science Explodes the Myth of Race. Daniel J. Fairbanks. A research geneticist's short, useful book about the *science* of race, the genetic research that has demonstrated that the genetic variation associated with what most people perceive as race represents a small proportion of overall genetic variation. This research into what is often a misunderstood and sensitive topic is pure science, Fairbanks (dean of the College of Science and Health at Utah Valley University) emphasizes, conducted without any political or social agenda. Rather than discrete genetic boundaries, the science shows that the world's human diversity consists of innumerable genetic variations spread throughout the human population in a complex set of multiple overlapping arrays. Fairbanks's congenial writing style works well in this context as he straightforwardly addresses the topics in just seven chapters: What is Race?; African Origins; Ancestry versus Race; 'The Color of Their Skin'; Human Diversity and Health; Human Diversity and Intelligence; and The Perception of Race. Prometheus Books, 2015, 191 pp., $18.



SCIENTIFIC CONTROVERSIES: A Socio-Historical Perspective on the Advancement of Science. Dominique Raynaud, with a preface by Mario Bunge. Raynaud, a sociologist and science historian, shows how organized debates in the sciences help us establish or verify our knowledge of the world. Through excruciatingly detailed examinations of socio-historic scientific controversies including Pasteur's germ theory and Pouchet's theory of spontaneous generation, vitalism, and the origins of relativism (the Duhem-Quine problem), Raynaud advocates an incrementalist position about the advancement of science through scientific controversies. This exhaustively documented book contains four appendices (all in French), a bibliography, and two indices. The book's audience is primarily hardcore scholars of the history of the philosophy of science; others beware. Transaction Publishers, 2015, 298 pp, $69.95.

nents, children had no problems facilitating in front of large audiences of strangers at FC conferences. The chapter also covers the horror that FC brought—the false claims of sexual abuse of children being facilitated. The claims arose in the head of the facilitator, not the children.

If you thought that FC was a thing of the past, you'd be very wrong. The latter part of chapter 2 documents its return like one of those horror movie monsters that just won't stay dead. The use of the technique, although rebranded as "supported typing" or "rapid prompting," is "still prevalent in disability service and educational settings" (J. Chen and K. Nankervis, "Stolen Voices: Facilitated Communication Is an Abuse of Human Rights," *Evidence Based Communication Assessment and Intervention*, 2015, in press). Douglas Biklen, who introduced FC to the United States, was promoted to the position of Dean of the School of Education at Syracuse University by University President Cantor, a psychologist who has an autistic child. He was even honored with a UNESCO award for his work with the disabled. Scott Lilienfeld, one of the authors of the book under review, has written an important paper on the return of FC: "Persistence of Fad Interventions in the Face of Negative Scientific Evidence: Facilitated Communication for Autism as a Case Example" in the journal *Evidence Based Communication Assessment and Intervention* (2015, in press; see "Facilitated Communication Has Returned from the Dead," May/June 2015 SI). Recognizing the importance of this paper, the journal's publisher, Routledge, has made the paper freely available online at http://www.tandfonline.com/doi/full/10.1080/17489539.2014.976332#.VNosKLvlJjQ.

The fact that the educational disabilities community is deaf to the scientific reality that FC is not only invalid but robs disabled individuals of their basic human rights by making the words and thoughts of others appear to be theirs and preventing them from expressing themselves as best they can (Chen and Nakervis, cited above) is extremely disturbing.

Chapter 3, "The Clever Hans Effect in Everyday Life," shows how naive realism has spawned belief in several phenomena where such belief can have negative consequences. Most surprising to me was the finding that drug- and explosive-sniffing dogs do very poorly in actual tests where their handlers don't know where the target materials are or are thought to be. Although the authors agree that more research is needed, the fact that such dogs will "alert" when

there's nothing there is troubling. One study the authors describe showed that out of 10,000 alerts, there was a 74 percent false alarm rate. Naive realism is also responsible for the incorrect beliefs that intervention programs such as Scared Straight and DARE (Drug Abuse Resistance Education) work when the data show clearly that they don't. The consequences of such false beliefs are not trivial. The last two mentioned programs have huge annual costs and may even have effects opposite of those claimed, thus doing more harm than simply doing nothing.

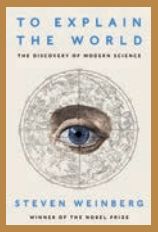
The vastly exaggerated worry about "stranger danger"—the fear that our children are in serious danger almost all the time from strangers waiting to abduct them—is another example of the pernicious effects of naive realism discussed in chapter 3. In reality, stranger abductions are extremely, extremely rare. For example, in 1999 115 children were taken by strangers. But since there were 72 million kids in the United States that year, the chance of such an event happening is 0.00000159 percent. In contrast, in the same year 4,564 children died in automobile accidents. So the risk of such a death is almost forty times greater. But that risk attracts far less panic than stranger danger.

There has been much discussion over the last few years in the skeptical community about what direction skeptical activity should take in the future. Should it continue to debunk the old standards like UFOs, ESP, Bigfoot, and astrology, or move on to other topics? In my view, continued attention to the "old" topics will always be needed. But the book under review here shows how skepticism can have truly beneficial effects that go beyond the more fringe "old" topics. Speaking out loudly and strongly against quack treatments like facilitated communication that do real harm to thousands of people would seem to me to be an important goal for skepticism in the future. *The Horse that Won't Go Away* is an excellent step in this direction.

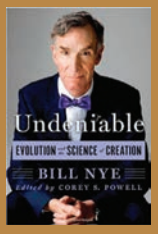
It's common to say that a book should be "required reading." In my case, this won't be just a cliché since I will be assigning this book in every psychology course I teach from now on. It is very well written. It is never boring or pedantic. It contains much excellent material for class discussion and written projects. ■

Terence Hines is professor of psychology at Pace University and author of *Pseudoscience and the Paranormal*. He is a CSI fellow.

THIS IS WHY WE CAN'T HAVE NICE THINGS: Mapping the Relationship between Online Trolling and Mainstream Culture. Whitney Phillips. A Lecturer in the Department of Communications at Humboldt State University offers a fascinating and insightful look at the phenomenon of online trolling—the abusive, often hateful and hate-filled posts and comments on social media intended to insult, rile, and offend. Skeptical of the common perception that trolls are deviant anomalies in the online world, Phillips argues that they are in fact very much a part of, and product of, culturally sanctioned impulses. Phillips describes the relationship between trolling and sensationalist corporate media, noting that for trolls, exploitation is a fun pastime; for media, it's a business strategy. Phillips offers an incisive look at the culture and motivations of online trolls, a ubiquitous subject online but one that has received scant scholarly attention. The MIT Press, 2015, 248 pp., $24.95.



TO EXPLAIN THE WORLD: The Discovery of Modern Science. Steven Weinberg. The Nobel laureate theoretical physicist (and CSI fellow) Steven Weinberg's latest book is the perspective of a modern working scientist on the science of the past. His focus is not solely on how we came to learn various things about the world, but on *how* we came to learn how to learn about the world. Weinberg says he considers it an irreverent history because he is not unwilling to criticize the methods and theories of the past from a modern viewpoint. While some historians of science "make a shibboleth of not referring to present scientific knowledge in studying the science of the past," Weinberg instead makes a point of using present knowledge to clarify past science. "I want to show how difficult was the discovery of modern science, how far from obvious are its practices and standards." Harper, 2015, 416 pp., $28.99.



UNDENIABLE: Evolution and the Science of Creation. Bill Nye. Edited by Corey S. Powell. Sparked by his public debate with a creationist in 2014, the enthusiastic Bill Nye here sets off on an informal, personal, almost breezy campaign to spread awareness of evolution and the powerful ways it shapes our lives. This might be the most accessible entrance to understanding evolution for the general reader, as Nye breaks the topic down into three dozen very short, lively chapters and throughout shows his uncanny ability to connect with the layperson while explaining and strongly defending good science. An updated edition is due out soon. St. Martin's Press, 2014, 309 pp., $25.99.

WHAT IS GOD? Can Religion Be Modeled? Thomas B. Sheridan. This is certainly a new kind of take on the scientific examination of religion. This one is based on modeling, which is widely employed in science, engineering, medicine, business, and government. Sheridan is Ford Professor Emeritus of Engineering and Applied Psychology at MIT and a member of the National Academy of Sciences (and also National Academy of Engineering). He finds parallels in how some people think of their computers almost as intelligent beings they don't understand and how they attribute these same properties to God. Sheridan shows that the abstract concept of God is not amenable to scientific modeling but the human practice of religion is. New Academia Publishing, 2014, 240 pp., $21.45.

—Kendrick Frazier and Benjamin Radford

Skepticism through Stick Figures

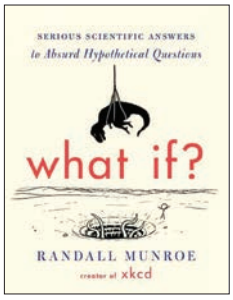
RUSS DOBLER

In September of 2005, when Randall Munroe launched xkcd, the webcomic he's become known for (as featured in the September/October 2012 Skeptical Inquirer), he was only twenty years old. The strip turned into a full-time gig when Munroe's robotics contract wasn't renewed by NASA in 2006. The name "xkcd" is intentionally meaningless, a mishmash of letters designed to be inscrutable. For the past decade, the comic's content, however, has humorously illuminated its readers on the topics of love, programming, physics, Velociraptors, and even skepticism.

Munroe's skepticism is understated and even-handed, gently lampooning classic cranks like psychics one day and needling Frank Drake about his fiddly alien life equation on another. His commitment to reason is most powerfully shown not by belittling believers, though, but through the personal narrative describing his then-fiancée's startling experience with stage three breast cancer.

The lack of cancer in the family history of Munroe's now-wife made the diagnosis even stranger, but he never expressed a "why us" attitude in *xkcd*. Instead, one strip asserted how they never searched for answers "beyond science," because it provides well-honed tools and not just platitudes. Or, in layman's terms, "It works, bitches."

Munroe brought his stick figures to the real world in July 2012 when he began to supplement the thrice-weekly *xkcd* with answers to fan queries about science, in the column called "What if?" Well, that's if you consider the consequences of a near–light speed fastball as something within the realm of possibility. "What If?" is still updated every week or so, and a compilation of mostly new "serious scientific answers to absurd hypothetical questions" was published in September 2014.



What If? Serious Scientific Answers to Absurd Hypothetical Questions. By Randall Munroe. New York: Houghton Mifflin Harcourt Publishing Company, 2014. ISBN: 9780544272996. 320 pp. Hardcover, $24; Kindle, $6.99.

Munroe's skepticism is understated and even-handed, gently lampooning classic cranks like psychics one day and needling Frank Drake about his fiddly alien life equation on another.

The offline version of *What If?* includes the fan-favorite 0.9c pitch, along with reasoned end results of other improbable things, like the global windstorm that would be created if the Earth suddenly stopped rotating (Newton be damned), or what would happen if everyone on the planet jumped in one spot at the same time (spoiler alert: not much). The topics are well researched with wry footnotes[1] and provide feasible descriptions of events that have never actually happened.

Most of those consequences are things the average person wouldn't even think of. The torrential atmosphere of the newly stationary Earth, for example, would unexpectedly cause blooms of life near the ocean's surface—below the part that's vaporized by the blast—and while everyone hopping together wouldn't budge the planet, the hardships of getting all those people *back to where they came from* would likely take a significant toll on human population numbers.

As fanciful as it all is, this is where *What If?* is valuable as a skeptical tool. By humorously learning the repercussions of unlikely physics, we can understand how a theoretical alien spaceship in our atmosphere couldn't turn on a dime, as many UFO witnesses report, without literal earth-shaking effects. If that's not enough to make you doubt ET's arrival, the section examining a Cessna's performance on different planets goes a long way to show that a vehicle designed for travel in one environment—whether it's air or space—doesn't usually function all that well in others.

The often counterintuitive realm of statistics is examined when Munroe answers how (un)likely it would be to find your one true soul mate, if that concept were genuine. He later shows that to call a random person and say "God bless you" right after they sneeze, you don't have to be psychic, you just have to try it 40,000 times. The law of large numbers will be obvious to you, but man, will that guy be freaked out!

What If? also excels at finding the logical extents of seemingly simple ideas, like how a super-powerful hair dryer could destroy the world, or what would happen to the Moon when targeted by the biggest laser array imaginable. These are almost magical scenarios with staggering, unanticipated consequences. One could easily draw a parallel with homeopathy, which starts with the idea that greatly diluting a substance makes the resulting solution more effective, leading to the inescapable (and ridiculous) conclusion that tap water should cure all disease.

The missteps in *What If?* are rare, such as the discussion of a magnitude 15 earthquake that probably couldn't happen,[2] but otherwise Munroe does a heroic job of bringing sense to nonsense, addressing questions other scientists are too busy to answer, like a cartooning Carl Sagan. While the book doesn't tackle classic pseudoscience head on, putting a quirky spin on the painstaking process of teasing through a problem makes *What If?* an entertaining introduction to critical thinking for those who might find other volumes too dry.[3]

Notes

1. Like this one!
2. According to the United States Geological Survey. Holy crap, a real citation!
3. Source: my opinion

Russ Dobler is a geophysicist, journalist, and member of the New York City Skeptics. He writes about the intersection of science, skepticism, and pop culture for the websites Adventures in Poor Taste! and the pulp press. You can follow him @russdobler46 for more on those topics or to find out what beer he's been drinking lately.

Psychology and Psychotherapy: How Much Is Evidence-Based?

HARRIET HALL

Psychology Gone Wrong: The Dark Side of Science and Therapy. By Tomasz Witkowski and Maciej Zatonski. Boca Raton, FL: BrownWalker Press, 2015. ISBN 978-1-62734-528-6. 304 pp. Paperback, $25.95.

Despite all those Polish jokes, Poland has its share of good scientists and critical thinkers. *Psychology Gone Wrong: The Dark Side of Science and Therapy* is a superb new book illustrating that fact in spades: Lead author Tomasz Witkowski is a psychologist, science writer, and founder of the Polish Skeptics Club; coauthor Maciej Zatonski is a surgeon and researcher known for debunking unscientific therapies and claims in clinical medicine. (They both have written for Skeptical Inquirer.) Together they turn a spotlight on research and treatment in the field of psychology.

The authors describe how disasters of social control...were instigated by psychologists who relied on their own flawed thinking.

They uncover distressing flaws in psychology research, show that many commonly accepted psychological principles are based on myths, argue that psychotherapy is a business rather than an effective evidence-based medical treatment, and question whether psychotherapy should even exist—since in many cases it offers no advantage over talking to a friend about one's problems, and it can cause harm.

Research

The authors describe how disasters of social control such as forced sterilizations and uncritical application of questionable IQ tests were instigated by psychologists who relied on their own flawed thinking rather than on empirical evidence from scientific studies. They tell horror stories about researchers who lied and plagiarized and who distorted, falsified, or even fabricated data, and got away with committing outright fraud over and over again. In some cases, fraudulent studies were accepted as gospel and became the basis for ill-advised treatments.

Witkowski and Zatonski argue for transparency in research and show how difficult it is for others to obtain the raw data from studies even when

the researchers say they are willing to provide it. They offer proposed solutions to increase transparency and promote data sharing. They discuss problems with peer review, editorial policy, poor research design, non-publication of negative studies, and failure to replicate positive studies. They show how these have created a situation where psychological theories are virtually unkillable.

Psychoanalysis, Tomasz and Zatonski argue, is a castle built on sand.

Psychotherapy

Psychoanalysis, they argue, is a castle built on sand. Investigation has shown that Freud falsified or fabricated the details of every case he used to build his theories. His approach was not scientific. He never tested his ideas with experiments that might have falsified his beliefs, and he ignored facts that contradicted his beliefs. Many of his supposed original ideas came from other authors. How did he "discover" the Oedipus complex when none of his patients ever suggested they had such a problem? The answer is in a letter he wrote to a friend saying, "I found in myself a constant love for my mother, and jealousy of my father. I now consider this to be a universal event in early childhood." Talk about projection and confirmation bias!

When tested, psychoanalysis was shown to be less effective than placebo. Its theories have been disproven, and no reasonable scientist or practitioner takes it seriously today. Yet it persists in popular opinion as one of the primary canons of practicing psychology.

Witkowski and Zatonski provide ample evidence to debunk myths about childhood experiences, such as that personality is formed by early childhood experiences, mental disorders are caused by early childhood experiences, and effective psychotherapy depends on the reconstruction of childhood experiences. Delving into childhood memories often causes serious problems and has in fact led to terrible abuses such as the recovered memory movement. The idea of repressed and recovered memories is a creative invention of therapists. Patients are easily duped because it provides a convenient scapegoat to explain their problems and relieves them of responsibility for their inability to cope with their lives. Academic psychologists bear much of the blame for failing to subject pop trends to empirical verification and failing to speak out and denounce false theories.

Witkowski and Zatonski also tackle the contentious issue of child sexual abuse. The typical consequence of childhood sexual abuse is not psychopathology but resilience. Studies have found no correlation with adult mental disorders, even when abuse is frequent or extreme, and that less than 10 percent of victims experienced the abuse as traumatic or shocking at the time it occurred. Childhood sexual abuse is abhorrent enough in itself without tarring it with false claims that it causes adult mental illnesses. And those who point out the research findings should not be accused of advocating crime.

Psychotherapeutic interventions, the authors note, in general have been remarkably unsuccessful. Only one of the many varieties of psychotherapy is supported by acceptable evidence: cognitive-behavioral therapy. There is no correlation between a therapist's training or experience and patient outcomes. Amateurs get equal results. The benefits of psychotherapy may be no better than the benefits of talking to a friend; in a sense, psychotherapists are paid to act as friends.

Amid this sea of dubious evidence, Witkowski and Zatonski raise the question of whether we can replace psychotherapy with something else. Can a new "salutogenic" health-oriented paradigm that focuses on human resilience and coping abilities replace the old pathogenic (illness-oriented) paradigm that focuses on what is wrong? Mental health is characterized by commitment (a sense of purpose), by the belief that you have some control over your life, and by the understanding that change, not stability, is a natural element of reality. Hardiness is largely genetic but can be developed by exposure to stress.

Psychobusiness

Psychotherapy is more business than medicine, and bogus therapies abound. The authors devote two entire chapters to neurolinguistic programming (NLP), showing how it developed and flourished without any basis in reality, how the scientific literature served as theater decoration for a pseudoscientific farce, how it infiltrated academia, and how the scientific community irresponsibly failed to denounce it.

In another chapter, one of the authors describes how he perpetrated a psychological version of the infamous Sokal hoax. He got a bogus article published about a new therapy he invented based on Rupert Sheldrake's pseudoscientific concept of "morphogenetic fields." He invented and plagiarized outrageously and offered clear hints about what he was doing, but the editors didn't notice. They had some questions, but he made up nonsense answers, and they bought his explanations. He accuses the editors of failing in their responsibility to protect their readers from false information and harmful recommendations. He conducted a test by having 172 people read the article: 77 percent said they would recommend the article to friends, and 61 percent would recommend the invented therapy to a person struggling with psychological problems. It's scary to think how easily he could have marketed his new therapy and become rich at the expense of patients. In fact, after he disclosed that it was a hoax, he got a letter from a man who *insisted that it was not a hoax*; he said he had been thinking along the same lines and had reached the same conclusions.

Reacting to Pseudoscience

In the concluding chapter, Witkowski and Zatonski describe strategies employed by scientists with regard to pseudoscience. They include remaining indifferent and keeping silent; playing down the problem; attacking critics by questioning their competence and even their mental health rather than by engaging with the evidence; talking and giving the illusion of action without actually doing anything; passive acceptance of criticism; arrogant hostility (insulting pseudoscientific practitioners and using words like psychobabble, mumbo-jumbo, quackery, and flimflam); and finally open, matter-of-fact criticism—the most fruitful strategy but the one least popular among psychologists.

You may find some of these ideas questionable or unpalatable. If so, I hope you will read the book and give the authors a fair chance to explain their thinking. This is a well-referenced, well-reasoned book chock-full of information about the state of psychology today. It exposes a lot of dirty linen that would be of interest to any reader. I agree with CSI Fellow James Alcock, professor of psychology at York University, whose back-cover blurb says it should be required reading for every psychologist and psychology student and anyone contemplating psychotherapy.

I have only one criticism. English is not the authors' native language, and it shows. There are many infelicities of expression and even errors of grammar and usage. This does not interfere with understanding what the authors meant, but a good editor could have done much to improve their text. ■

Harriet Hall, MD, a retired Air Force physician and flight surgeon, writes and educates about pseudoscientific and so-called alternative medicine. She is a contributing editor and frequent contributor to the Skeptical Inquirer, a CSI fellow, and a member of the CSI Executive Council. She is also an editor of the blog *Science-Based Medicine* and author of *Women Aren't Supposed to Fly: Memoirs of a Female Flight Surgeon* as well as coauthor of the 2012 textbook *Consumer Health: Guide to Intelligent Decisions.*

At Last a Photo of the Soul?

JOE NICKELL

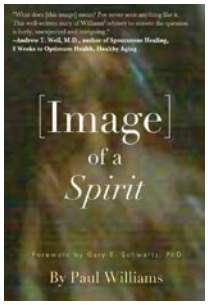


Image of a Spirit. By Paul Williams. Foreword by Gary E. Schwartz, PhD. Waterside Press, Charleston, SC, 2015. ISBN: 978-1-941768-39-6. 143 pp. Paperback, $35.00.

Some five years before he published his little 143-page book, *Image of a Spirit*, Paul Williams was at the bedside of his dying ninety-two-year-old mother, Mildred. Although she was a "rational" woman who "hated all things spiritual," including "organized religion," she appeared to Williams to have had "a classic Near Death Experience during her last two days." He infers that from her reaching with her frail arms and smiling "for minutes on end at something pleasant to her," although she might only have had a dying brain's hallucination, waking dream, or simple memory.

Williams seems at pains to convert his mother posthumously from atheist to drum major for everything New Age. He touts his own nine months of spiritual training in 1972 called "alchemical transformation" (34); his screenplay based on *The Tibetan Book of the Dead*; his interest in Kirlian photography, psychic phenomena, eastern mysticism, scrying experiences, and visions; his references to "energy" and "other-dimensional" images (33, 36); his consultations with a "psychic"; his conversations with Dean Radin (author of *Entangled Minds: Extrasensory Experiences in a Quantum Reality*) and Loyd Auerbach (author of *ESP, Hauntings, and Poltergeists*); and not to neglect his mention of using "consciousness expanding sacramental substances" (28) and taking the drug MDA with Andrew Weil (88–89), the New Age doctor/guru (author of *Spontaneous Healing*) who wrote a blurb for Williams's book.

Approximately an hour and forty-five minutes after his mother's death, while a Jamaican hospice attendant and his lady friend Melissa cleaned and dressed the corpse, Paul Williams decided to take some photos with his Blackberry cell phone. He saw nothing unusual, but when he looked at the photos later (emailed to his MacBook computer and "enlarged by the I-Photo program"), he saw in the first picture a small humanoid-like figure.

He labels the image a "*psi*-photo" (*psi* referring to alleged psychic phenomena) and again "this psi ghost photo, this 'spirit picture'" (37, 47). Gary E. Schwartz, a credulous proponent of psi and author of books such as *The Afterlife Experiments*, wrote in the book's foreword that the photo could not possibly have been faked (xiii–xiv). He cites a professor of computer sciences at Dartmouth, Harry Farid, who says

it passed his foolproof test for authenticity (his brief report is included in the book). However, that analysis would only reveal that the photo had not "been altered from the time of its initial recording" (82–83). In other words, it could detect a faked photo of a genuine scene, but not a faked scene in a genuine photo, and certainly not an illusion or anomaly caused by, say, some play of light or shadow.

When proponents argue that no imaginable glitch could produce such a glitchlike image, and then argue (or cleverly imply) it's a ghost, they are committing a logical fallacy called an "argument from ignorance."

Williams's alleged psi-image actually looks like a *simulacrum*—a perceived image (such as the "Face" on Mars or the Man in the Moon) resulting from *pareidolia*, the mind's tendency to "recognize" common shapes (especially faces) in random patterns. Such simulacra are often held to be paranormal entities. Not surprisingly, the "psychic" he consults, Sandra O'Hara (who has some of the traits associated with a fantasy-prone personality), says the image is Williams's mother "leaving her body"—"her soul"—except that "she's gone back to maybe when she was in her thirties" (106), and Williams has described it as "the picture of mom" (70). Yet Gary Schwartz notes, ". . . the first thing that strikes many people is that the head looks more like a bird (or some other-worldly entity)" (xiv). Could it be a demon? An extraterrestrial?

Psychic O'Hara, looking further, even found she could see the faces of at least *five* people in the streaked and spotty image: In addition to (1) Williams's mother, there were supposedly (2) his father, (3–4) his mother's parents, and (5) a boy (whom Williams helpfully suggests may be an uncle who died young).

However, Williams's sister told him, "That's nothing. It's a reflection." Several others agree with her. But a reflection "Of what?" Williams challenges (48), apparently misunderstanding her point. He seems to think it would have to have been something of that quasi-figural shape that had been reflected, whereas a reflection could merely be a chance pattern of reflected light. In any case, since we are not apprised of details of the room—especially behind the photographer—we cannot say what might have been there to affect the scene. Therefore the photo is essentially worthless as evidence of anything.

Interestingly, the simulacrum appears against the dark background of Melissa's shirt, a "sequined tight black blouse" (22). Parapsychologist Dean Radin is quick to dismiss the sequins because, he tells Williams, "There was no strong light in the somber room where your mother died that could be reflected by the sequins" (71). But that is simply not true. Although Williams says he "had the camera's flash turned off" (21), a light source clearly illuminated the scene, as shown by brightness on the hospice worker's cheek, rubber-gloved hand, and soap bottle, as well as Melissa's hair. Was it from an overhead light, a window, or something else?

Williams has backed away from calling the picture "the first photo of the human spirit" (90). But if the snapshot is as unique as people quoted in his book suggest—other photo ghosts being typically amorphous—are the latter then all non-genuine? If there is no other such picture—as parapsychologists Radin (72) and Loyd Auerbach (76) suggest—and therefore no known standard or exemplar for comparison, how do we determine that the picture is that of a spirit? The term *energy* is used throughout the book, but no energy known to science could both completely leave a human body at death *and* retain the body's shape without dissipating over an hour and forty-five minutes' time. How would such an entity function without a brain? And why would it appear in only one of a series of photos?

When proponents argue that no imaginable glitch could produce such a glitchlike image, and then argue (or cleverly imply) it's a ghost, they are committing a logical fallacy called an "argument from ignorance." One cannot say, we don't know what caused this, and then conclude, therefore, that we *do* know. That is especially true when the reason we lack a complete answer to the question of how the image formed is that the needed evidence is not at hand and may now be impossible to reconstruct with any precision. Besides, postulating the supernatural is equivalent to invoking "X," since science has never proven the existence of the supernatural.

To argue against a photo glitch but accept the alleged supernatural is (in a biblical expression) to "strain at a gnat, and swallow a camel." Despite attempts to switch the burden of proof, this case remains laughably unproved. ■

Joe Nickell, PhD, is CSI's senior research fellow and author of numerous books including *Camera Clues* and *The Science of Ghosts*.

Skeptical Inquirer
EVOLUTION
WHY DO EDUCATED PEOPLE DOUBT IT?
THE BIG AND SMALL OF IT
ALIEN LIGHTS IN THE SKY
YES, BUT EXPLAIN THIS!' ANECDOTES VS. SKEPTICISM
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CLIMATE 'SKEPTICS' OR 'DENIERS'?

When Education Results in *Less* Acceptance of Evolution

"When Don't the Highly Educated Believe in Evolution? The Bible Believers Effect" by Charles S. Reichardt and Ian A. Saari (March/April 2015) presents the initially counterintuitive survey evidence that while nonbelievers increasingly accept evolution, those who believe that the Bible is the word of God increasingly reject the scientific belief in evolution and other scientific beliefs that contradict their faith the greater their educational level. Several psychological explanations are provided.

Perhaps a social evolutionary explanation might also be considered. The educational environment, especially the higher one goes, promotes scientific beliefs and discourages unscientific religious beliefs. This results in those with less strong religious beliefs becoming nonbelievers and more accepting of counter-religious scientific beliefs as their education progresses. "Natural" selection results in fewer and only the most adamant hard-shell believers surviving as believers with increasing education.

To test this hypothesis, one would need a longitudinal study of beliefs as students progress in their education. This would require considerably more effort and persistence than a survey of beliefs.

David W. Briggs
Marion, Massachusetts

Not having access to the raw data, I find it difficult to determine whether the authors of "When Don't the Highly Educated Believe in Evolution" took the essential precautions of determining what being "highly educated" consists of. I'm reasonably certain, for example, that the alumni of Bob Jones University and Reed College will differ considerably in their views on evolution. But, even within institutions, there undoubtedly is a great deal of self-sorting when it comes to majors and what courses to take.

I can speak from my own experience as a teacher at a community college. When I was teaching physical anthropology, I warned my students at the outset that if they didn't believe in evolution they would probably have difficulties in mastering the subject. Since I had a high dropout rate and did no follow-up research to ascertain which of the many reasons would induce a student to quit my class, I obviously can't claim that the anti-evolutionists simply went elsewhere—though I believe my warning may have been influential

A further bit of evidence to that effect came from a promising former student of mine who came back to visit on campus a year or so after moving on to a four-year college. I had wondered at the time why she had dropped my Philosophy 101 class, so I took this opportunity to ask her. She said, "I was teaching Sunday school at the time, and it became obvious that either it or your class had to go."

But, back to evolution. A biology teacher at the school dealt with the issue in a very different manner. On the first day of class he announced, preemptively, "Anyone who doesn't accept evolution as a fact, leave right now." I'm not sure if he had any takers, but one of his students—a fundamentalist—who was one of my counselees, told me confidentially that he was most definitely not a believer in evolution but was going to stick with the class and implied that he was going to show the instructor just how wrong he was. By the end of the quarter, the student came back to my office to tell me that he'd decided to major in biology and, sheepishly, admitted that he no longer rejected evolution.

So my guess is that we'll find far more "educated" antievolutionists as engineers, musicians, and architects, than educated astronomers, zoologists, geologists, etc. Maybe it's not education per se that produces more "deniers," but the places where one does one's learning and what course selections one makes when moving on to a career goal.

John A. Broussard
Kamuela, Hawaii

I would add one question to the study: Were you *ever* a Bible believer?

I think the new results of the study would be:

1) Among Bible nonbelievers, those more highly educated are more likely to believe in evolution.
2) Among one-time Bible believers, those more highly educated are less likely to remain Bible believers, leaving a shrunken sample purified of heathens and likely evolution believers.

As people graduate from Sunday school and grow up, they often change their religious knowledge and beliefs unrecognizably. As a Vietnam War dissenter from a Republican home, I think it's harder to shed one's familial politics, especially in a secular household. The initial connection of Republican brain and Bible believer brain might be apples and oranges with Bible belief not the truly independent variable we think at the start.

Thanks for the provocation.

Frederick Cullison
Houston, Texas

A possible explanation for the statistical interaction between Bible belief and education level leading to diverging beliefs in evolution might be due to differential teaching of evolution in different schools. Perhaps Bible nonbelievers, due to their secularism, attend secular schools, where, in no uncertain terms, evolution is taught and creationism is debunked. Among Bible believers, their religiosity may result in many of them attending religious schools, where evolution is denied or possibly diluted with creationism, i.e., "We teach both." As presented, the Reichardt-Saari article makes no such distinction. It would be enlightening to study only students in both groups who attended only secular schools, degree of evolution education controlled for. If, the divergent graph lines continued, as opposed to parallel lines (no statistical interaction), the mystery would continue.

Thomas Janas
Chicopee, Massachusetts

Why do college-educated Bible believers deviate more from scientific evidence? Perhaps in part because many Bible-believing high school seniors go to Bible colleges. If a student has attended a Bible college for four years and has not increased his commitment to creationism or intelligent design, then he probably was not paying attention in class and wasn't socializing with his fellow students.

Alice Anderson
Las Cruces, New Mexico

Not all college and graduate degrees are equal, especially when it comes to scientific knowledge. A PhD in biology and an MBA are both graduate degrees, but someone who has achieved the former is likely to have been much better informed about evolution even before entering college than someone who holds the latter. At the same time, the first person is far less likely to believe that the Bible is the word of God than is the second person.

David Dvorkin
Denver, Colorado

Regarding the observation that the more educated some Bible believers are the more likely they will deny the manmade cause of climate change and the existence of evolution, I find the same phenomenon can be applied to the anti-vaxxers. Several reports show that the parents who don't vaccinate their children tend to be more highly educated with post-secondary degrees. I also see parallels in the potential explanations for the Bible-believers effect suggested by the authors in the mindset of the anti-vaxxers.

Strength of Religious Beliefs: The latest report showed that pre-

senting scientific fact and evidence of the benefit of vaccines has the *opposite* effect on the anti-vaxxers. Their strongly held belief is akin to religious belief (I want to say cult, but it might be a little harsh).

Counterargument: Those anti-vaccine web pages of better quality are full of seemingly scientific argument and results of (fringe) studies. The better educated anti-vaxxers are not ignorant of how the immune system works; therefore, they are better skilled in "self-serving assessments" of information supporting their view.

Need for Consistency: They display classic symptoms of cognitive dissonance. The discomfort with the evidence of near elimination of contagious diseases over several decades of vaccination could be higher in the more educated anti-vaxxers, probably because they are more knowledgeable. Their need to reconcile the inconsistency is likely higher and more motivated.

Over Confidence: In the anti-vaxxers' mind, because they are highly educated therefore they can do their own research (Dr. Google gives all the answers you need!) and form their own opinion. They just ignore the pitfalls of confirmation bias.

What else can you do with people like that, other than exercising "harm reduction" (such as no exemption whatsoever except very strict medical reasons; unvaccinated children can't go to school or participate in any public activities), just to protect the society from these people?

Mio Sam Lao, PhD
Haymarket, Virginia

I read with great interest "When Don't the Highly Educated Believe in Evolution" by Reichardt and Saari. This is an important line of research, and the authors are to be commended for pursuing it. My only point of contention is their use of the word *believe*. The scientific community, and especially SI, must be in the forefront of changing the language from "believe" to "accept." Evolution is not a belief system; it is a scientific fact, and we must always present it as such. Using "believe" allows room for the unscientific to "teach the controversy," even when we all know there is none.

Charles E. Orser, Jr., PhD
Nashville, Tennessee

Though it almost certainly wasn't intentional, the title, "When Don't the Highly Educated Believe in Evolution?" is misleading in the extreme, as exemplified by my wife's reaction. She is a devout evangelical, and when the title caught her eye, she exclaimed, "At last, someone who will tell the truth!" The misdirection could have been avoided by substituting the word "some" for the word "the" in the title.

The condition "Bible Believer" is so inimical to the condition "Believer in Human Evolution," that it is no surprise that the latter group is a very small percentage of the former group. The thing that is missing from the analysis is the fact that group size diminishes rapidly as you progress across the graph from least to most educated. The net result is that many will conclude that increasing education leads to increased tendency to deny evolution, when it actually points to a progressively smaller population who holds to the inconsistent beliefs that the Bible is the word of God and that evolution explains the origin of man.

Allen V. Robnett
Retired science and math teacher
Gallatin, Tennessee

The results of research that Bible-believers with higher education are more likely to not believe in evolution or global warming does not surprise me. My long experience conducting interventions with people in cults, sects, and new religions since the early 1980s reflects those results. Most of my clients in cults over the decades have had higher than average educations. Reichardt and Saari offer standard explanations for this effect including belief strength, confirmation bias, need for consistency, and over confidence.

Lately, I have been reformulating what it is that draws people to absolute faith claims and I find that it is not faith at all. The Bible-believer's effect is the result of social influences surrounding the certainty to knowledge that something is true. People in general are naturally attracted to transcendent propositions and to an immediate apprehension or experience of knowledge. We all at times wish we had and some (perhaps most) believe that we have some kind of extrasensory knowledge. This inner desire persists despite evidence to the contrary. That desire may be inherent and comes from a category of epistemology called gnosis. According to Gilles Quispel (2005), gnosis is the third component of the European cultural traditions. We use three ways to understand and apprehend reality: gnosis, faith, and reason.

Gnosis may be the most primitive aspect of how we know in evolutionary terms. We can say that animals employ a form of gnosis to respond to and survive in the environment. We use words like instinct, genetic programming, and natural response to explain how animals know how to behave. We tend not to project faith and reason onto animals although it appears that something like faith occurs when animals "trust" a herd leader or in their ability to avoid a predator nearby. Also, it appears that animals can "figure something out" as when a raven or monkey employs a new tool to retrieve food from a hole. In this model, faith and reason were born of gnosis and no one aspect can be independent of the other. Of course, faith and reason in humans is dramatically more apparent and expressed.

Joe Szimhart
Birdsboro, Pennsylvania

Charles S. Reichardt and Ian A. Saari respond:

The letters thoughtfully forward two plausible explanations for the Bible-believers effect. First, both Anderson and Janas hypothesize that those who believe the Bible is the word of God tend to matriculate to religious schools more than to secular schools that, as years of education increase, strengthen their beliefs in both the Bible and creationism. Second, both Briggs and Cullison hypothesize that increasing years of education in secular institutions causes the least committed Bible believers to abandon their beliefs in both the Bible and creationism, so only the staunchest believers in the Bible and creationism remain. These explanations entail selection and survival mechanisms (selection of Bible believers into religiously affiliated institutions and survival of only the staunchest Bible believers in higher education), which, fittingly, are akin to selection and survival mechanisms in Darwinian evolution.

Our article proposes four explanations for the Bible-believers effect. The two preceding explanations from the letter writers fall under the rubric of our first explanation: among Bible believers, those with more education hold stronger religious beliefs, which make them increasingly likely to deny scientific facts (such as human evolution) that conflict with their religious beliefs. The relationship between education and strength of religious beliefs among Bible believers is strongly evidenced in the General Social Survey (GSS) data. The GSS data also reveal a dramatically diminishing proportion of Bible believers as levels of education increase in accord with Robnett's comments and as predicted by the second of the letter writers' explanations but not necessarily by the first. Unfortunately, the GSS data provide no more direct means to assess the two hypotheses from the letters. Nonetheless, we wouldn't be surprised if one or both of these hypotheses were correct and provided mechanisms by which our explanation operates. In any case, our article's primary conclusion (that it likely poses a greater challenge to alter belief in human evolution among highly educated Bible believers than among less highly educated Bible believers) still holds for all these explanations.

Broussard and Dvorkin give reasons why Bible nonbelievers increasingly accept human evolution with increasing education but don't, by themselves, explain why Bible believers decreasingly accept human evolution as education increases (except to the extent their explanations incorporate something akin to Anderson's and Janas's—and that may be what they intend).

Szimhart suggests the Bible-believer effect is the "result of social influences surrounding the certainty to knowledge that something is true." Given that the proportion of Bible believers shrinks dramatically with

education, perhaps shrinking group size increases group cohesion thereby increasing social influences within the group, which might explain the Bible-believer effect. But we interpret Szimhart's main point to be the interesting hypothesis that beliefs are particularly difficult to change when they derive from gnosis, and not just from faith or reason. That most of Szimhart's clients for intervention "have had higher than average education" is consistent with our primary conclusion, assuming those most likely to be the subject of outside interventions are those whose beliefs are most difficult to change.

We are intrigued to learn from Lao that a Bible-believer type effect might exist among those who deny the efficacy of vaccines. But we don't agree with Orser's suggestion that "accept" be substituted for "believe" because we are skeptical such a substitution would make human evolution any more acceptable to non-accepters.

Even when we don't completely agree, we found all the letters (both published and unpublished) to be thought provoking, and we thank their authors for sharing their views.

Thank You, SI!

First of all, I want to thank you for just being there and for standing up when others just sit down.

It's a great pleasure to read all your articles and get in touch with such great people who admire just nature (the universe) itself, the world as it is . . . and not any "supernatural" things. Those who make things simpler than trying to make them more complicated.

I had been a religious guy (praying before going to bed at night, going from time to time to church . . .) until Friedrich Nietzsche made me became so critical about religious claims. Then I moved to UFOs, ETs, astrology, telekinesis, telepathy, and many other kinds of nonsense . . . I was especially fascinated about the ET idea—but just for a while because something extraordinary had happened: Carl Sagan's *Broca's Brain* came into my hands—and I have to say I didn't stop reading until I finished it. That book changed me forever!

I consider myself so lucky for knowing of such a great man, astronomer, and public person who had so many skills . . . like Carl Sagan. For me, Carl is my hero! I have others: Richard Dawkins, James Randi, Isaac Asimov, Martin Gardner, Victor J. Stenger, Paul Kurtz, Steven Weinberg, Stephen Jay Gould, Susan Blackmore, Daniel Dennett, Lawrence M. Krauss, Elizabeth Loftus, Joe Nickell, Steven Novella, Phil Plait, Eugenie Scott, Seth Shostak, Jill Tarter, E. O. Wilson . . . and the list could go on—but my special one is still Carl.

So, thank you CSI! Thank you skeptics, scientists, and philosophers. Thank you a lot for . . . everything!

Dan Râu
raudan2002@gmail.com

Africa's Satanic Panic

In reference to "Africa's Satanic Panic" (March/April 2015), I draw your attention to a 2011 film called *The Witches of Gambaga* about women accused of witchcraft and expelled from their communities. It is sensitively done and takes place in Ghana. They are women who are denounced by rivals and driven out by force. Their families are unable or unwilling to protect them. There is a town, Gambaga, that will take them in, which is said to be protected from witchcraft, but the leader of this community makes a handsome profit by forcing the women or their families to pay rent or work for him, etc., for him to protect them. Not all the chiefs buy into this logic, nor does the narrator, but she points out that the women have few means of protection. It's an excellent documentary for undergraduates.

Carol Hayman
Professor of Anthropology
Austin Community College
Austin, Texas

Murder of Avijit Roy

Through you I extend my condolences and sympathy to family, friends, and associates of Avijit Roy. After his despicable murder, many reports in the national press in India have mentioned his association with CSI.

You might also be aware of similar deeds that have been perpetuated on Prof. Humayan Azad (2004) and Rajiib Haider (2013) in Bangladesh. In February, closer to home, another atheist named Govind Pansare was shot (he passed away a few days later) with his wife, much like the rationalist Dr. Dabholkar.

After the latter incident, you were kind enough to feature my letter in SI questioning the very concept and efficacy of the World's First Anti-Superstition Law enacted in my state, featured with implied pride in SI. The same state government today has got the assent from the president of India, for a legislation banning cow-slaughter in the state. An act brought about to pander to "supposed" Hindu theology. Consistency for any rational thought/action demonstrated more by its absence?

All that has followed, including Avijit's assassination, bears out my skeptical stance, admittedly on an anecdotal level, of any state legislation being an efficacious avenue for treading on a rational path. Every time all such acts, as well as equally deplorable ones of rape, torture, and slavery, are followed by blandishments by the State machinery (the police and the judiciary) saying they will not let the perpetrators get away. The dismal apprehension and conviction rate in these and all other cases in Indian courts indicate an abject failure on the part of the State to protect individuals, specifically if their thinking falls outside the accepted norm.

Aarmin Banaji
Nagpur, India

Educational Reforms

In regard to Dale DeBaksy's article "In Defense of Useless Math" (January/February 2015)—I'm a retired science/math teacher with thirty-three years of teaching experience. I taught everything from seventh grade remedial math through Advanced Placement physics. The problem with innovative educational ideas (No Child Left Behind, Common Core, etc.) is that the actual programs/questions are usually written by so-called educators who don't have a clue as to what's being taught at each grade level. Michigan, my home state, had a test known as the MEAP. The science portion of the test (the part I'm most familiar with) was written by the following: three college professors (sorry, I don't remember the disciplines), three superintendents, five principals, three special education teachers, one Earth science teacher, one biology teacher, one chemistry teacher, and one physical science teacher. I believe the idiom that applies here is "too many chiefs and not enough Indians."

At a meeting with one of the directors of the program, I suggested that we canvas every teacher in the state at every grade level (and discipline) to find out what is being taught. After these results were correlated, we'd send out a flyer to each teacher who participated to ask them to come up with questions for the actual test and send them to the MEAP at either $25 or $50 per question. Payment would be made on a first-come, first-served basis. Almost everyone in the science department thought it was a great idea. Two people did not: my department chairman (who basically reamed out my derriere later) and the director of the program, who, basically, thought the idea was stupid. Until test makers start talking to people in the trenches, educational programs/tests will be nothing more than a variation of the same.

Walter Duda
Redford, Michigan

[FEEDBACK

The letters column is a forum on matters raised in previous issues. **Letters should be no longer than 225 words**. Due to the volume of letters we receive, not all can be published. Send letters as email text (not attachments) to letters@csicop.org. In the subject line, provide your surname and informative identification, e.g.: "Smith Letter on Jones evolution article." Include your name and address at the end of the letter. You may also mail your letter to the editor to 944 Deer Dr. NE, Albuquerque, NM 87122.

SKEPTICAL ANNIVERSARIES

by Tim Farley

July 10–21, 1925: The Scopes "Monkey Trial" takes place in Dayton, Tennessee.

July 17, 1985: A judge voids a $39 million fraud verdict against Scientology after thousands of church members had protested outside the courthouse in Portland, Oregon.

July 29, 1955: Peter McNab shoots a photo of the Loch Ness monster near Urquhart Castle. It became well known but was later found to have been doctored.

August 7–11, 1995: Madelyne Tolentino reports the first eyewitness sighting of a chupacabra in Puerto Rico. Ben Radford later showed she was remembering the creature from the movie *Species*, which she had recently seen.

August 9, 1890: An article titled "It Is Only Hypnotism" in the *Chicago Daily Tribune* describes what is now known as the Indian Rope Trick. The article was later admitted as a hoax, but the legend of the trick lives on.

August 10, 1950: At one of the first large public demonstrations of Dianetics, the worlds first "Clear" (Sonya Bianca) is unable to perform simple tests in front of an audience in Los Angeles.

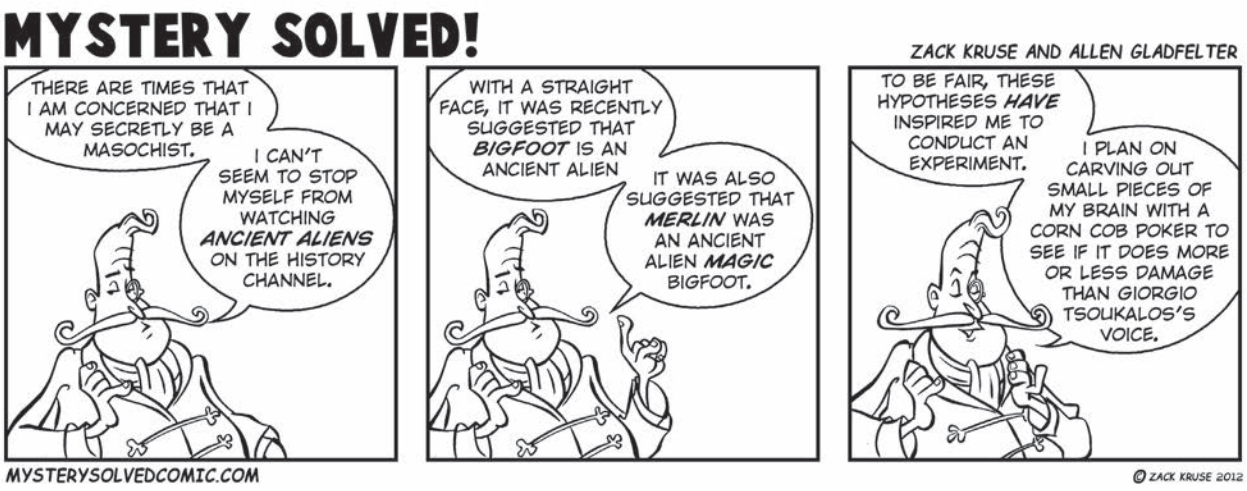
August 11, 1920: Charles Ponzi's fraudulent investment scheme crashes and he is arrested the next day. "Ponzi scheme" has been used as a synonym for pyramid scheme ever since.

August 11, 1980: TV host Don Lane storms off the set of his own program on Australian TV after getting angry at James Randi over the abilities of psychic Doris Stokes.

August 21, 1955: The Kelly-Hopkinsville encounter (aka the Hopkin Green Men case), an alleged close encounter with aliens, takes place in Kentucky.

August 24, 1930: After the birth of Princess Margaret, a London newspaper has an astrologer write her horoscope. It is so popular with readers it becomes a regular feature, and competing newspapers follow suit.

Tim Farley is the creator of the website whatstheharm.net and blogs at skeptools.com. He is a past fellow of the James Randi Educational Foundation.


MYSTERY SOLVED!
ZACK KRUSE AND ALLEN GLADFELTER
THERE ARE TIMES THAT I AM CONCERNED THAT I MAY SECRETLY BE A MASOCHIST.
I CAN'T SEEM TO STOP MYSELF FROM WATCHING ANCIENT ALIENS ON THE HISTORY CHANNEL.
WITH A STRAIGHT FACE, IT WAS RECENTLY SUGGESTED THAT BIGFOOT IS AN ANCIENT ALIEN
IT WAS ALSO SUGGESTED THAT MERLIN WAS AN ANCIENT ALIEN MAGIC BIGFOOT.
TO BE FAIR, THESE HYPOTHESES HAVE INSPIRED ME TO CONDUCT AN EXPERIMENT.
I PLAN ON CARVING OUT SMALL PIECES OF MY BRAIN WITH A CORN COB POKER TO SEE IF IT DOES MORE OR LESS DAMAGE THAN GIORGIO TSOUKALOS'S VOICE.
MYSTERYSOLVEDCOMIC.COM
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